PIT AND QUARRY

MARCH 1954

Slackline Recovery Setup of Guaranteed Gravel & Sand Co., Mankato, Minn. (See Page 106.)

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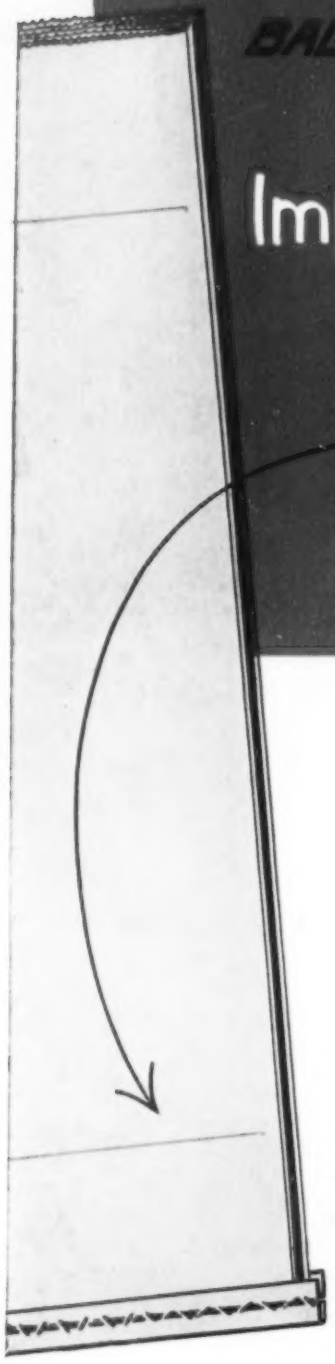
BAGPAK **PREFORM***

Improves the Open Mouth Multiwall Again!



The more easily closed PREFORM bagtop first introduced in this country by Bagpak—and now tremendously successful—has been further improved with the PREFORM feature at the bottom—at no additional cost.

This new PREFORM Multiwall permits filling to the very bottom—makes it easier to form the top—speeds bag closing—reduces sewing time. PREFORM feature at the bottom with its increased efficiency often permits the use of shorter bags.

- **Makes bagtop forming easier**
- **Speeds bag closing**
- **Permits better filling**
- **Makes better looking package!**

SEND COUPON TODAY for full information!

Dept. Q-11

INTERNATIONAL PAPER COMPANY
BAGPAK DIVISION
220 East 42nd Street, New York 17, N. Y.

Gentlemen:

Please send me full information about the new Bagpak PREFORM Multiwall Paper Bags.

NAME_____

ADDRESS_____

*Trade Mark

International Paper COMPANY

BAGPAK DIVISION

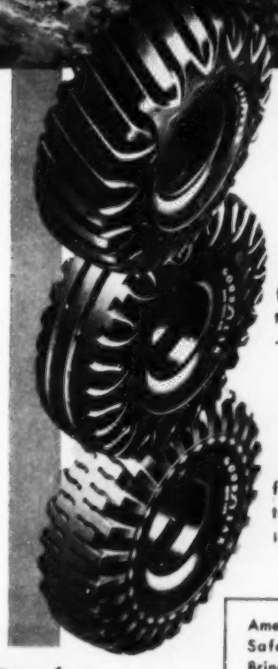
BRANCH OFFICES: Atlanta · Baltimore · Bowling Springs, Kansas · Boston · Chicago · Cleveland · Denver · Detroit · Kansas City, Kansas · Los Angeles · New Orleans · Philadelphia · Pittsburgh · St. Louis · San Francisco · IN CANADA: The Canadian Paper Products, Ltd., Montreal, Ottawa, Toronto

PERFORMANCE PAYS OFF!

THE tires you buy or specify can help keep you ahead of schedule—or drop you into a mess of dead equipment, idle men and busy red ink.

Goodyears are the best workers—the longest wearers—the tires *specifically designed* to thrive on your kind of jobs—to give you lower costs per hour.

It takes worlds of experience to build such tires—and Goodyear has it. Goodyear has built more tires for more specific purposes than anyone else on earth. So when you buy or specify Goodyears, you're buying the tires that can put more money in your pockets. Goodyear, Truck Tire Department, Akron 16, Ohio.



HARD ROCK LUG
for stamina and full pull, forward or reverse, on all kinds of tire-killing work.

HARD ROCK RIB
for front wheels on all tire-killing service. Rugged—smooth rolling—easy steering.

ROAD LUG
for toughness and super-traction OFF the road and long, smooth mileage ON the road.

FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!

America Needs Better, Safer Roads—Let's Bring them Up to PAR

Road Lug—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network—THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network

PIT AND QUARRY, March, 1954, Vol. 46, No. 9. Published monthly by the Pit and Quarry Publications, Inc., 431 South Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy $0.50 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

For the Removal of Waste
and Water from Sand
and Similar Materials

McLanahan SCREW WASHERS

are designed for long service life and lowest maintenance cost

DOUBLE SCREW WASHER
with Gear Cover Removed

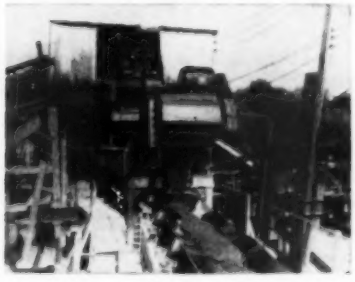
SINGLE SCREW WASHER

McLanahan Screw Washers—thoroughly proven in service—provide the ultimate in equipment for the efficient, low cost removal of foreign material and water from sand or coarse materials.

These washers contain many outstanding features, including: antifriction bearings which are easily removed without disassembly—extra large settling area—enclosed reduction drive—flights are cast chilled alloy iron for extreme hardness and resistance to wear.

Washers are available in Single and Double Screw models illustrated—in 20′ and 25′ lengths dependent on moisture content and capacity desired. Investigate today!

Typical installations



McLANAHAN & STONE CORPORATION
Pit, Mine and Quarry Equipment Headquarters Since 1835
Hollidaysburg, Pennsylvania

Write for Bulletin SW-953

This bulletin contains data and drawings on Single and Double Screw Washers. Write for your copy today!

Dependable Products: Single and Double Roll—and Jaw Crushers, Crushing Plants, Reciprocating Plate and Apron Feeders, Roll Grinders, Conveyors, Elevators, Screens, Scrubbers, Steel Log Washers, Screw Washers, Sand Drags, Hoists, Jigs, Dry Pans, Dryers, Scrap Bundlers, Pulleys, Gears, Bearings, Sprockets, Sheaves, Rollers, Bin Gates, Elevator Buckets, Gratings, Car Wheels, Ferrous and Bronze Castings.

EASTON®

another EASTON user gets the LOW-COST HAUL . . .

Easton TP Trailer – The standard EASTON pan-type trailer. Capacities from 14 to 20 tons. Used singly or in combination. Standard EASTON axle and fifth wheel. Durable doorless construction – no hoist or other moving parts. Works with the truck or tractor of your choice. The same bodies may also be truck-mounted. Built for the *low-cost haul* in mines and quarries.

Easton HE-20 Hoist – The standard EASTON electric overhead hoist for EASTON TP trailers and BP bodies. Visible stop-and-hold feed. Remote push-button control. Operated by the crusher attendant. Eliminates need for separate unit hoists. Hoist assembly as supplied includes electric winch, A-frame and hook, cable, and controls. Job-fitted for low-cost dependability.

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

B-1060

How to lower the cost of elevating

Let LINK-BELT recommend the bucket elevator that meets your requirements from 13 types in 4 basic designs

WANT to cut your cost of raising materials to processing machinery or to storage bins or silos? Regardless of the capacity required — or the characteristics of your material — there's a Link-Belt Bucket Elevator for the job.

Working with this broad line, Link-Belt engineers can select the one best-suited to your needs. A wide range of sizes on chains or belts is available.

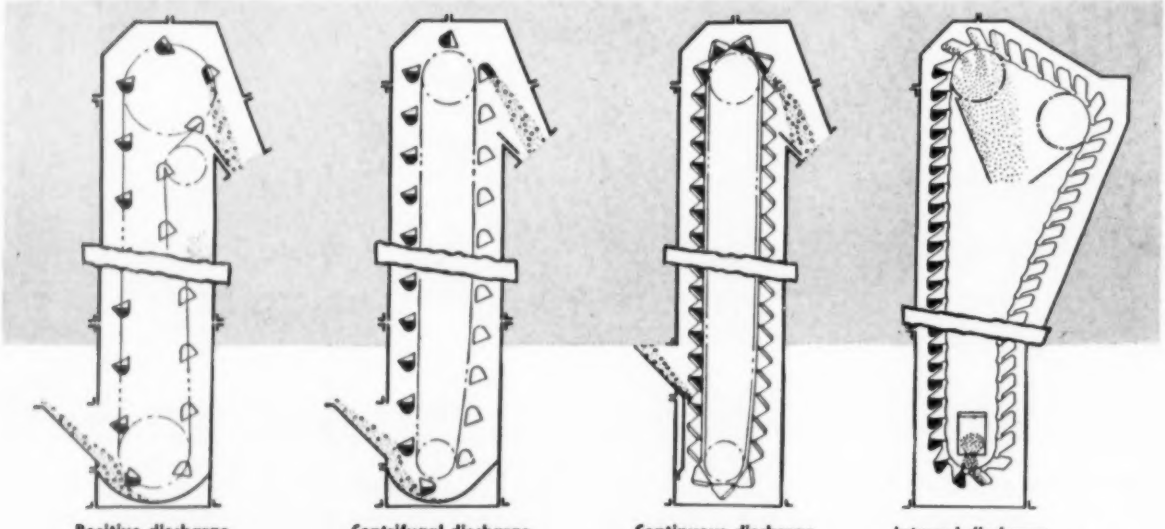
What's more, installation, maintenance and operating costs are low with Link-Belt Bucket Elevators. Rigid, jig-built casings are self-supporting, need only occasional lateral tie-ins depending on height. You have quick access to both head and boot for periodic inspections. Simple screw or gravity take-ups maintain chain or belt tension at all times.

There's an experienced materials handling engineer in the Link-Belt office near you. Call him for complete information.

LINK-BELT

BUCKET ELEVATORS

◀ Twin Link-Belt continuous discharge bucket elevators provide continuous flow of materials at this cement mill. Inclined elevators of this type are ideally suited for handling sand, gravel, stone and similar materials.



Positive discharge
for light, fluffy, fragile or materials that tend to stick to the buckets.

Centrifugal discharge
for free-flowing, fine or loose materials with small to medium lumps.

Continuous discharge
for range of materials —light to heavy, small to large, abrasive lumps.

Internal discharge
for gentle handling of small articles such as pellets, seeds, castings.

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities. 13.250-A

THEIR BUSINESS is ROCK -TOO!

SLUGGING into stuff like this, hour after hour, is punishment for any machine. Watch a Northwest at work in this kind of digging — or any kind of digging. There is no stutter — no restart — no dipper juggling. It's a clean sweep of the dipper up through the material — a smooth cycle to the truck and a quick return back to the cut. That means real output at the end of the day.

This is the second Northwest in this quarry of Geo. M. Baker at Lockwood, Missouri. Their business is Rock, too! The first Northwest saw over 10 years' service in this same tough going. Mr. Baker has proved his Northwest. The service he has received, along with that of countless other quarry operators who have had to get output in rugged "going", is the best guarantee that you'll get the kind of service you want.

The Northwest is a *real* Rock Shovel and if you have a *real* Rock Shovel you'll never have to worry about output *in any kind of digging.*

Talk it over with a Northwest Man.

NORTHWEST ENGINEERING COMPANY
135 South LaSalle Street, Chicago 3, Illinois

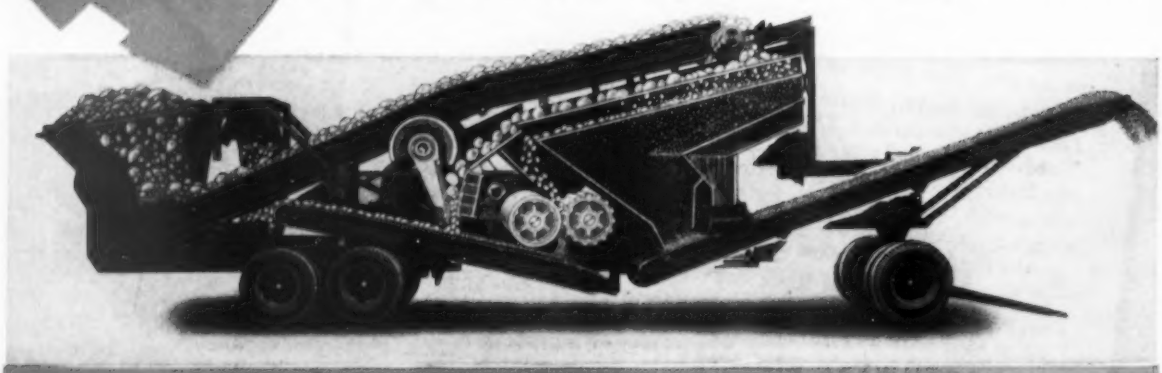
NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Convertible for any Mining Material Handling or Excavation Problem

designed for MORE PROFITS

WITH UNIVERSAL'S "SCALPING DECK" METHOD



UNIVERSAL 880 GRAVELMASTER

Universal's "Scalping Deck" method of screening assures balanced loads to the jaw and roll crushers . . . provides greater efficiency and economy, protects screen, jaws, and rolls. You get better gradation of material, less jaw wear, less roll shell wear, longer screen life, savings in power, more effective use of screening area, faster material flow, greater plant output. These all add up to more tons per hour at less cost per ton with the new Universal 880 Gravelmasters.

Strictly for profit . . . buy a Gravelmaster. Get top engineering design. Get the rugged stability of a permanent installation plus ready portability to produce profitably anywhere.

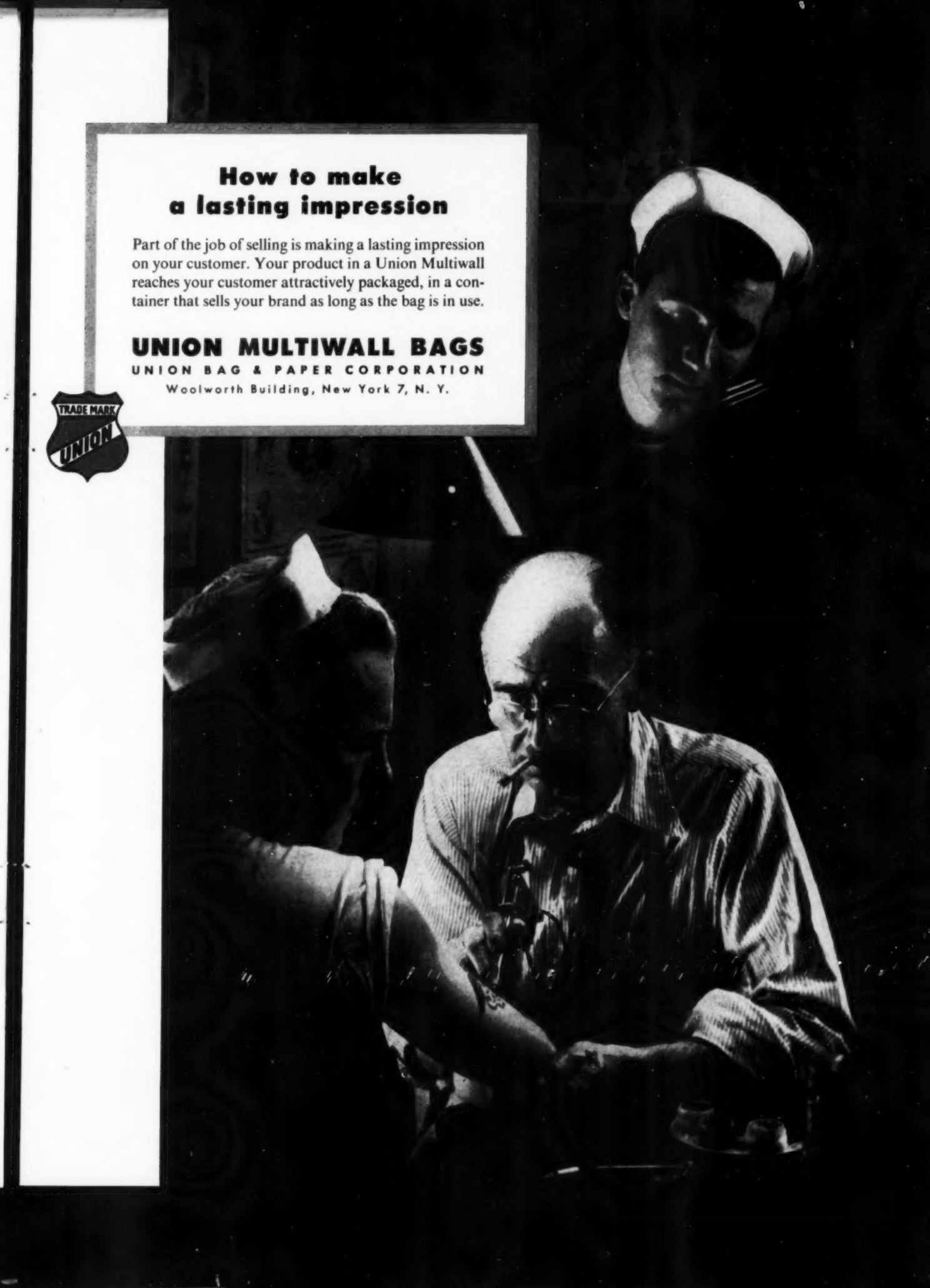
Complete, compact Universal Gravelmasters are built in a range of streamlined sizes with capacities from 75 to 320 tons per hour. They're used extensively as complete gravel crushing, screening and loading plants, or to step up production as secondaries following a primary in quarry operations. For complete details on the size that meets your requirements ask your Universal distributor or write.

MODEL	Junior "B"	Junior	Senior "R"	Super Senior
Jaw Crusher	10"x16"	10"x24" 10"x36"	10"x36"	10"x36"
Roll Crusher	18"x16"	24½"x16"	30"x24"	40"x24"
Gyrating Screen	2'x8' 2½	3'x10' 2½	4'x12' 2½	5'x12' 2½
Plate Feeder	19"	19"	25"	25"
Weight	28,600#	44,500#	54,000#	59,000#
CONVEYORS				
Under Conveyor	18"x10'	24"x14'	30"x18'	30"x19'
Feed Conveyor	20"x23'	24"x26'	30"x29'	36"x34'
Delivery Conveyor	24"x18'	24"x20'	30"x21'	30"x24'
	Front Discharge Folding	Front Discharge Folding	Front Discharge Folding	Front Discharge Folding

UNIVERSAL ENGINEERING CORPORATION division of PETTIBONE MULLIKEN CORP.

619 C Avenue N.W., Cedar Rapids, Iowa
Phone 7105

4700 W. Division St., Chicago 51, Illinois
Phone Spaulding 2-9300


How to make
a lasting impression
Part of the job of selling is making a lasting impression on your customer. Your product in a Union Multiwall reaches your customer attractively packaged, in a container that sells your brand as long as the bag is in use.
UNION MULTIWALL BAGS
UNION BAG & PAPER CORPORATION
Woolworth Building, New York 7, N. Y.
TRADE MARK
UNION

compare for operator safety with any other tractor loader !

Note that the operator on a BAKER-LULL SHOVELOADER sits high and safely remote from moving bucket arms, which are located in front of him. This eliminates the constant hazard to life and limb of flailing control arms beside and above him, as in other makes.

Note, too, that operator has unobstructed 360° visibility to see where he's going at all times. There are no blind spots at sides caused by control arms as bucket is raised. From the driver's seat he has full view of the bucket in every position—even when digging.

Safer operation is also assured by 4-wheel hydraulic power brakes, hydraulic power steer on front or rear or all four wheels, big 14.00 x 20 hi-flotation tires, 100-inch wheelbase for stability, etc., etc.

Other exclusive built-in features increase utility by providing natural digging and full bucket action, improved rough-terrain operation, greater mobility, longer life and lower maintenance.

Standard 1½ yard bucket is interchangeable with 1¼ yard or 2½ yard sizes, also forks, lifting crane, backfill blade, bulldozer or snow plow. Write for 8-page descriptive bulletin. The BAKER-LULL Corporation, 356 West 90th Street, Minneapolis 20, Minn.

THE BAKER-LULL CORPORATION,
356 West 90th Street • Minneapolis 20, Minn.

Please send 8-page illustrated specification bulletin AD-55 on your 4-Wheel Drive SHOVELOADER

NAME.....

COMPANY.....

ADDRESS.....

CITY.....STATE.....

Baker Lull
handling equipment

SHOVELOADER

New improved vibrating screens...wider choice of special types...highlight displays at Sand & Gravel & Crushed Stone Shows

Visitors at the Sand and Gravel and Crushed Stone Shows in Chicago, February 15-19, 22-24, demonstrated intense interest in exhibits showing latest developments in modern vibrating screens.

Among the vibrating screen exhibits, one receiving the keenest attention from the crowds was that of the Deister Machine Company, one of the pioneers in the specialized design of machinery for the aggregates industry. Deister personnel were on hand, to answer the many questions regarding the company's newest developments.

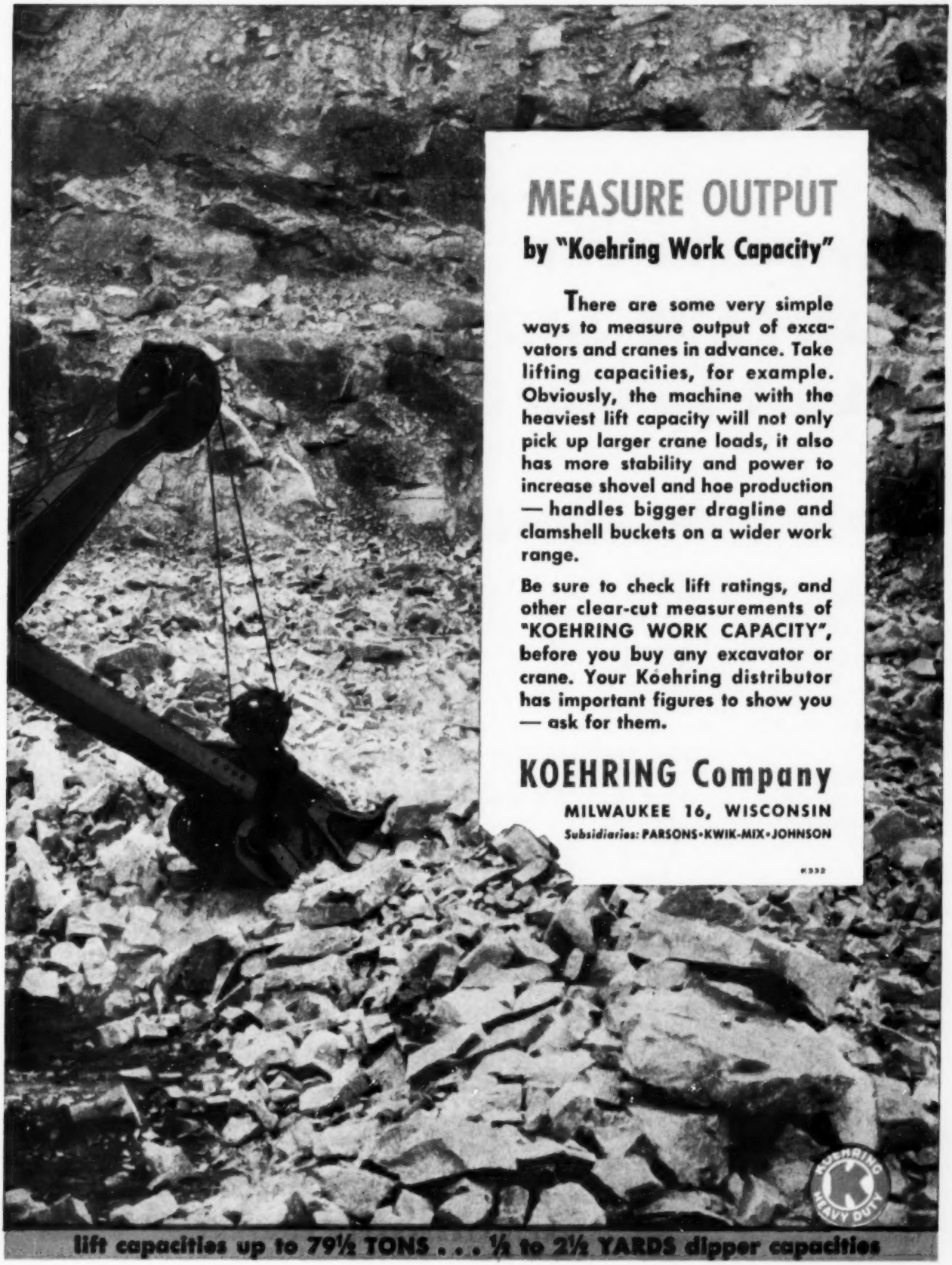
Particular attention was given to the display of the new Deister Heavy-Duty Type UHS Vibrating Screen, shown in the photo above. Designed for greatest speed and efficiency, the new Type UHS features a life-time unitized vibrating mechanism—precision-built and jig-assembled—with two-bearing construction and oil-bath lubrication. Full explanation was presented on such features as opposed elliptical throw, low screening angle, automatic screen cloth tension, adjustable throw and fully cushioned vibration.

On this Type UHS, the screening medium is mounted in divided sections, and held under tension transversely. These screen sections are identical in size for easy interchangeability. The new Type UHS is available in 3', 4' and 5' widths; 10', 12' and 14' lengths; 1, 2 and 3 deck.

Deister personnel were also questioned by visitors on the complete line of Heavy-Duty Types ETP and ETU Vibrating Screens, and on the Model SL Ag Lime Screen which permits extremely rapid stroke-cycle for maximum separation efficiency of fine, moist materials. Deister Types ETP and ETU are provided in 1, 2, 3, and 4 deck models in sizes from 2½' wide x 4' long to 5' wide x 10' long.

Visitors were invited to write for more specific details of the over 100 standard Deister types and models.

Deister Machine Company, 1933 East Wayne St., Fort Wayne 4, Indiana. (Advertisement)



MEASURE OUTPUT

by "Koehring Work Capacity"

There are some very simple ways to measure output of excavators and cranes in advance. Take lifting capacities, for example. Obviously, the machine with the heaviest lift capacity will not only pick up larger crane loads, it also has more stability and power to increase shovel and hoe production — handles bigger dragline and clamshell buckets on a wider work range.

Be sure to check lift ratings, and other clear-cut measurements of "KOEHRING WORK CAPACITY", before you buy any excavator or crane. Your Koehring distributor has important figures to show you — ask for them.

KOEHRING Company

MILWAUKEE 16, WISCONSIN

Subsidiaries: PARSONS • KWIK-MIX • JOHNSON

K-932

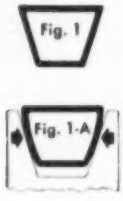
KOEHRING HEAVY DUTY

lift capacities up to 79½ TONS . . . ½ to 2½ YARDS dipper capacities

Why V-Belts with CONCAVE SIDES Last Longer!

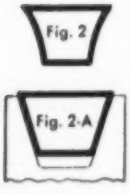
(U.S. PAT. NO. 1813599)

Prove this yourself!



Take any *straight-sided* V-Belt (Fig. 1). Bend it—as it bends in going around a pulley. The sides will at once *bulge out* (Fig. 1-A). Clearly, those bulging sides will press *unevenly* against the V-pulley—and this causes *extra wear* at the points shown by the arrows (Fig. 1-A).

Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2)



Instead of *bulging*, the precisely engineered CONCAVE SIDES merely *fill out* to *fit exactly* in the sheave groove (Fig. 2-A). The sides press *evenly* against the V-pulley. All wear is distributed *uniformly* across the *full width* of the Gates Vulco Rope—and this means *longer* belt life and *lower belt costs* for you!

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE Sides—the Gates Vulco Rope!

Typical Gates Vulco Rope Drive—the Gates V-Belts are built with Concave Sides to insure longer belt wear.

Gates VULCO ROPE DRIVES

REG. U.S. PAT. OFF.

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

THE GATES RUBBER COMPANY
DENVER, U.S.A.

Janesville Sand & Gravel Co.

EVERYTHING WAS RUNNING SMOOTHLY...

Lubrication Problem Causes Costly Breakdown; Cities Service Trojan M Greases Solve It!

The Janesville Sand & Gravel Company of Janesville, Wisconsin, faced a critical situation. One entire plant was forced to shut-down because of a lubrication problem which caused a breakdown of a costly set of bearings in the shaker-screen system.

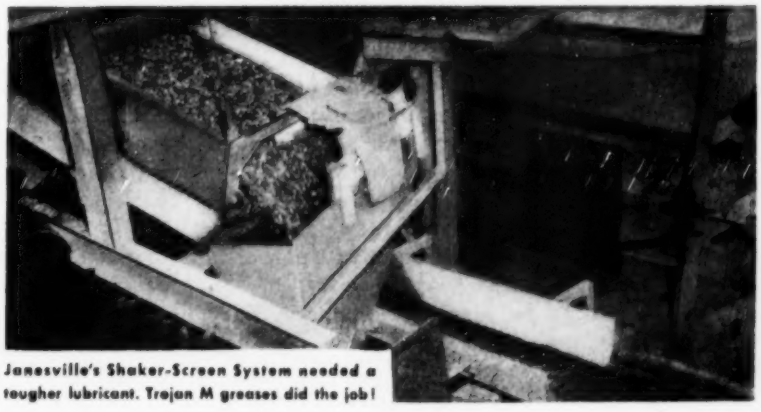
Writes Janesville official, George Meyer: "We were not using your (Cities Service) lubricants in this particular plant at the time, however past experience led us to seek your assistance. Your engineer pointed out the reasons for the bearing failure and outlined the vital functions the lubricant must perform in this operation. He recommended Cities Service Trojan M greases as the best solution to our problem. We tried them and found they give us exactly what we want —maximum performance!"

"Shortly after this incident, we were given a complete industrial survey in which your engineer showed us how we could minimize the number of lubricants, increase equipment life, and assure ourselves of proper lubrication. Our experience enables us to recommend the use of Cities Service industrial oils and greases, as well as the technical assistance Cities Service so generously supplies."

UNTIL THIS MACHINE BROKE DOWN!

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS



Janesville's Shaker-Screen System needed a tougher lubricant. Trojan M greases did the job!

EIMCO

WORLD'S FINEST TRACTOR EXCAVATOR

HYDRAULIC TORQUE CONVERTER WITH UNIDRIVE TRANSMISSION — AN EXCLUSIVE FEATURE ON EIMCO TRACTOR EXCAVATORS

When hydraulic torque converters were first used in heavy prime moving equipment it marked a step forward in tractor design. But now the hydraulic torque converter with the Eimco Unidrive transmission provides the ultimate in heavy tractor drives and the ideal combination for effortless operation, longer life through cushioned load, increased work output and maximum operating efficiency.

The Eimco 105 is the only crawler tractor with the maneuverability permitted by hydraulic torque converter and Unidrive transmission.

This combination of mechanical ingenuity makes the 105, a 17 ton brute, as agile as a kitten. You can dance right, left, forward, backward without stopping to shift, without scraping a track pad.

The Eimco 105 matches all load conditions with exactly the right combination of speed and power and is capable of exerting maximum draw bar pull AT ALL TIMES.

It is the only crawler tractor in which the operator can change gears under full load, on grades or uneven terrain without stopping, losing position or dropping the moving load.

The 105 develops more drawbar pull per engine horsepower than any other tractor.

The 105 is the only tractor designed for the heavy attachments ordinarily used on tractors today. This extra strength built into the 105 is designed to

WITH COST SAVING ADVANTAGES

absorb the extra vertical loads into the main frame permitting all auxiliary equipment to be attached to the frame and leaving the tracks free to oscillate on uneven ground.

105s are made of heavy fabricated or cast alloy steel parts throughout. All gearing, bearings and shafts are oversize for years of uninterrupted service. All parts are easily accesible for quick service. Clutches never need adjustment. Timken tapered roller bearings are separately caged in track rollers, idlers and final drives for perfect alignment, accurate fit and long life.

The Unidrive transmission is a compact, complete unit, containing all the gearing and clutches for speed changing and full independent reversal of each track. This design combines all of the best features of constant mesh gearing and hydraulically operated friction clutches with sealed oil bath pressure lubrication of all wearing parts.

The independent control of each track, made possible by the Eimco Unidrive transmission, is another exclusive feature. Two separate final drives, one for each track, have extra heavy alloy steel gearing and extra large diameter shafts. There are no clutches, brakes or gadgets in the Eimco 105 final drives.

The operator of the Eimco 105 sits up front where he can see his work. The controls are easy and convenient. Tractor controls require only one hand with the other free to operate the attachment. Foot pedals have been eliminated for clutching, shifting or turning. Stopping to shift for speed changes or reverse is eliminated.

The Eimco 105 gives you new, low operating and maintenance costs. You get the work capacity of the largest crawler tractor units but with the low initial investment as well as the operating economies previously confined to the smaller tractors.

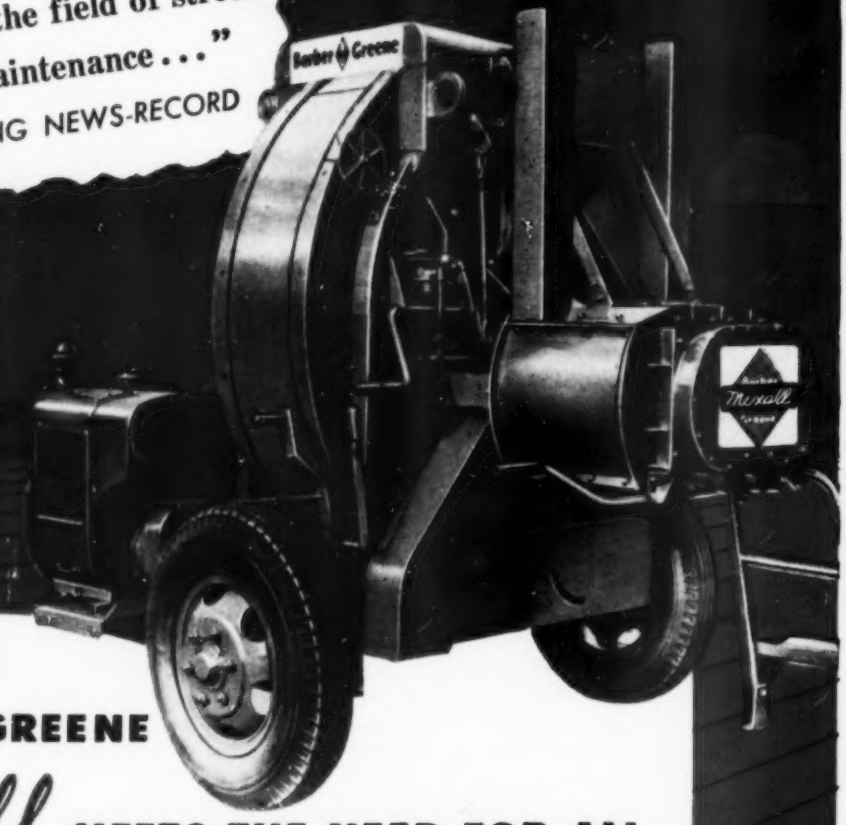
Eimco 105s offer more exclusive advantages and have improved design and construction features in EVERY part. This is the reason Eimco 105s are increasing output with lower operating and upkeep costs on every job. See this revolutionary piece of tractor equipment before you consider buying anything in the tractor, excavator, shovel or bulldozer line. Write for complete information. The Eimco Corporation, P. O. Box 300, Salt Lake City, Utah.

EIMCO

THE EIMCO CORPORATION

Salt Lake City, Utah, U.S.A.
Export Office, Eimco Bldg., 52 South St., New York City

"Undoubtedly the most significant development in the field of street and highway maintenance . . ."
—ENGINEERING NEWS-RECORD



Barber-
Mixall
Greene

THE NEW BARBER-GREENE Mixall MEETS THE NEED FOR ALL MAINTENANCE AND SMALL PAVING JOBS

The quotation at the top of this page is typical of impartial observers who have seen the new Barber-Greene MIXALL perform. There is widespread agreement among editors, road builders and government officials that the need for a machine capable of on-the-spot production of even the highest type hot mixes has been answered by the development of the MIXALL.

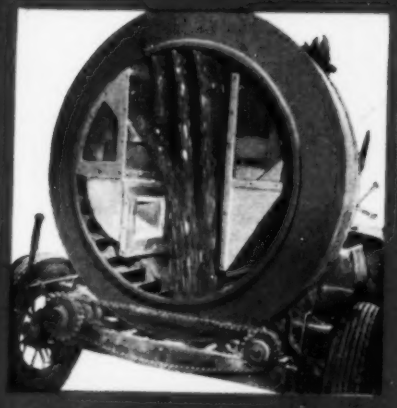
Primarily designed for "stitch in time" maintenance to prevent major break-ups of much needed roads, the MIXALL also opens the market for surfacing of sidewalks, driveways, parking lots, service stations, playgrounds and countless others.

Once you see the MIXALL perform, you'll quickly recognize the business-building possibilities it holds for you. See your Barber-Greene Distributor for the full story—or write for information.

see your **B-G distributor** ...or write

"BIG PLANT" *Principles*—

...WITH NO COMPROMISE IN DESIGN



Rotary Drum Drying

Proved, efficient rotary drum dryer. Aggregate falls in a thin veil through a blast of hot gases which removes and drives off all moisture. Same principle as largest B-G dryers.

Pressure Mixing

Twin shaft heated pugmill insures pressure "kneading" action. For superior to tumbling action or screw conveyor principle. Assures thorough coating of each particle—no dead spots. Mixes lowest slump concrete.

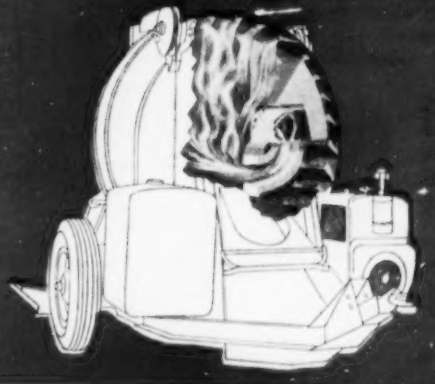
SIMULTANEOUS *Drying and Mixing*—

...BOTH CYCLES INDEPENDENTLY CONTROLLED

Independent control of drying and mixing, with both cycles operating simultaneously, achieves exactly the dryness and mixing time desired. This is vitally important to the successful production of high-type hot patch materials.

Hot patches are essential because: (1) they are less susceptible to the inroads of water; (2) they adhere more effectively to bituminous or concrete areas surrounding the patch; (3) they may be opened to traffic immediately—no curing period is required.

To get the best hot patch material, efficient drying is essential. The Mixall provides a B-G rotary drum dryer, the most effective dryer. It enables you to gain the many benefits of using hot patch materials.



Look AT WHAT YOU CAN DO

MIX ALL QUANTITIES: from a single 300 lb. batch up to 5 tons per hour of hot mix—or up to 10 tons per hour of cold patch.

MIX IN ALL LOCATIONS: towed to the job by truck loaded with aggregate . . . fed directly from truck or from stock pile or pit. Works in a single traffic lane. No set-up time required.

MIX IN ALL WEATHER: heated aggregate makes low atmospheric temperature mixing possible—allows quick repair to prevent major failures.

MIX ALL TYPES: of bituminous materials including stabilized mixes—as well as low slump Portland cement mixes.

WRITE FOR NEW *Mixall* BULLETIN

Descriptive 8-page bulletin will be sent on request.

Barber-Greene

Aurora, Illinois, U. S. A.

Hardfacing

Check the **COMPLETE VICTOR LINE**

VICTOR hardfacing alloys save you time and money with faster application, smoother deposits, longer wear!

See your VICTOR dealer now . . . get the facts, and you'll get VICTOR!

VICTOR for welding

Profitable dealerships open; inquire now!

For Manual Application

THIS HARD-FACING ROD	FOR THESE CONDITIONS	FOR THIS EQUIPMENT	APPLI-CATION
VICTORTUBE	Severe abrasion	Scarifier teeth, dredge cutter blades, posthole augers, oil field tools, ditcher teeth	Acety. AC-DC Elec.
VICTORTUBE "SPECIAL"	Abrasion, severe impact	Oilfield bits, rock bits	Acety. only
VICTOR TUNGSMOOTH	Thin cutting edges	Coal cutters, brick augers, pug mill knives, screw conveyors, farm tools	Acety. AC-DC Elec.
VICTORITE	Earth abrasion or sliding friction	Plowshares, cultivators, steel mill guides, cement chutes, shaft bearings, rolling mill guides	Acety. AC-DC Elec.
TUBE VICTORITE	Abrasion, impact	Plow points and farm tools	Acety. AC-DC Elec.
VICTORITE 1	Corrosion, heat, abrasion	Saw teeth, carbon scrapers, wire guides, rocker arms, steel mill applications	Acety. AC-DC Elec.
VICTORITE 6	Red heat, impact, corrosion and abrasion	Blanking, forming and trimming dies, cams, hot punches, pump shafts	Acety. AC-DC Elec.
VICTORITE 12	Heat, abrasion, impact	Saw blade inserts and other critical applications	Acety. AC-DC Elec.
VICTORITE CARBON ARC	High abrasion, thin deposit	Plowshares, lister shares, sweeps	Carb. arc Acety.
VICTORALLOY	Abrasion, severe impact	Tractor rollers, dredge pump impellers, bucket lips and teeth, rock crushers, steel mill wobblers, roll crushers	Acety. AC-DC Elec.
VICTORALLOY #1	High abrasion, medium impact	Bucket lips, rock crushers, Muller tires, gyratories	Acety. AC-DC Elec.
VICTORALLOY "A"	Angular shock, extreme impact, build-up	Clutch parts, gears, crusher plates, gyratory mantles, build-up for hardfacing	AC-DC Elec. only
VICTORALLOY "B"	Heavy impact, moderate abrasion	Tractor rollers and sprockets, shovel pads, plates, idlers, etc.	AC-DC Elec. only
VICTORALLOY "C"	High abrasion, moderate shock and impact	Tractor grousers, pressure rolls, crusher segments, roll crusher teeth	AC-DC Elec. only

Also VICTOR Bulk Metals, VICTORITE Plow Point Bars, and VICTOR Super-Titan Blasting Nozzles

For Automatic Application

THIS TYPE	FOR THESE CONDITIONS	ON THIS KIND OF EQUIPMENT
VA #1	Abrasion, medium impact	Crusher rolls, crushers, gyratory crushers
VA #2	Abrasion, impact, Multi-pass application	Steel mill applications
VA #3	Abrasion, light impact	Mill guides, crushers, dredge bushings
VA #4	Multiple layer build-up	Tractor rails, crane wheels, general build-up
VA #5	Heavy impact, abrasion	Tractor rollers, idlers, mine car wheels, sheave wheels
VA #6	Medium abrasion, high impact	Crane wheels, drums, roll necks
VA #7	Abrasion, high impact	Build-up for hardfacing
VA #8	Abrasion, medium impact	Dozer bits, roll crushers, scraper blades
VT #60	Extreme abrasion	Tool joints, grader blades, scraper blades, augers

VICTOR EQUIPMENT COMPANY

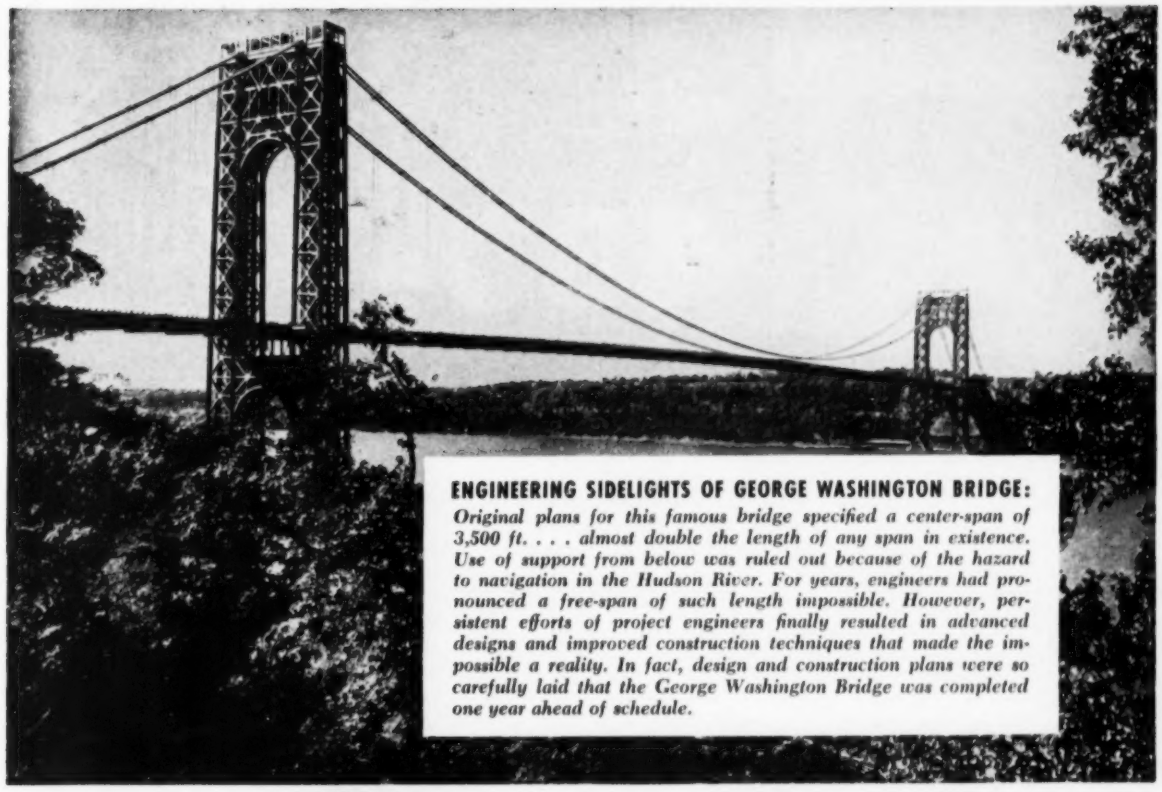
ALLOY ROD AND METAL DIVISION

11440 So. Alameda St. • Los Angeles 59

(Also Mfrs. of welding & cutting equipment, blasting nozzles)

844 Folsom St., San Francisco 7 3821 Santa Fe Ave., Los Angeles 58

H-11

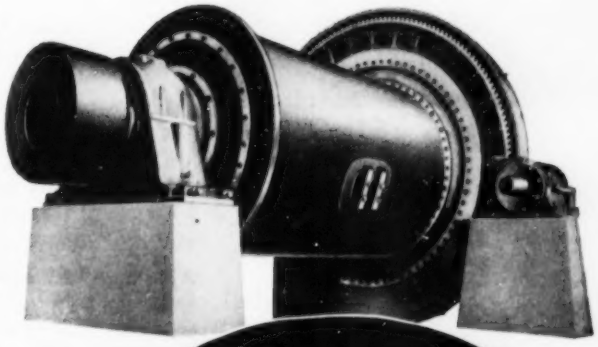


ENGINEERING SIDELIGHTS OF GEORGE WASHINGTON BRIDGE:

Original plans for this famous bridge specified a center-span of 3,500 ft. . . . almost double the length of any span in existence. Use of support from below was ruled out because of the hazard to navigation in the Hudson River. For years, engineers had pronounced a free-span of such length impossible. However, persistent efforts of project engineers finally resulted in advanced designs and improved construction techniques that made the impossible a reality. In fact, design and construction plans were so carefully laid that the George Washington Bridge was completed one year ahead of schedule.

It's the Design of Traylor Grinding Mills that Improves Quality and Reduces Operating Costs for you

Every Traylor Grinding Mill is "Traylor-Made" to your exacting specifications. This is the result of adapting Traylor's advance design features to your specific requirements. Half-a-century of engineering experience is placed at your command. That's why, with Traylor, you are assured of a uniform product of the right fineness for you. On Traylor Grinding Mills, manually operated pumps coat each trunnion with a film of lubricant which lifts and floats the mill to overcome high starting torques and reduce operating and maintenance costs due to "dry" starting. Precision cut steel driving gears, trunnions cast integral with the detachable heads, shell liners of manganese or alloy steel . . . all indicate the improved design and construction features that are yours with Traylor. Bulletin 8121 illustrates these features in detail. Send for your free copy today.



For wet or dry, coarse or fine grinding.

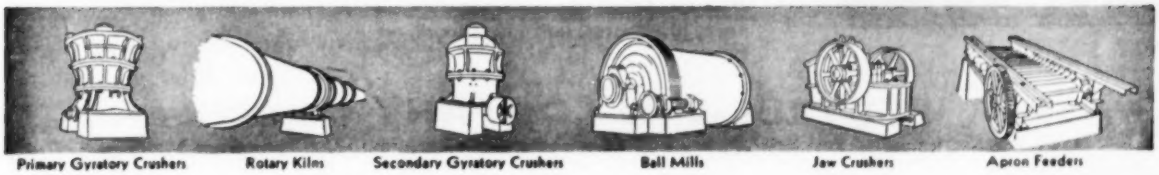
Traylor

TRAYLOR ENGINEERING & MFG. CO.

626 MILL ST., ALLENTOWN, PA.

SALES OFFICES: New York • Chicago • San Francisco

CANADIAN MFRS: Canadian Vickers, Ltd., Montreal, P. Q.



Primary Gyratory Crushers | Rotary Kilns | Secondary Gyratory Crushers | Ball Mills | Jaw Crushers | Apron Feeders

announcing . . .
THE NEW BUCYRUS-ERIE
480-W
12 cu. yd. WALKING DRAGLINE

WARD LEONARD ELECTRIC or DIESEL

The new 480-W incorporates advanced design features that have been field-proved through years of service in other Bucyrus-Erie walking draglines. It is a big-yardage, all-weather machine, built for year-after-year profitable operation.

LONG WORKING RANGE — Moves material 431 ft. with 215-ft. boom and 8-yd. bucket without throwing bucket; 395 ft. with 195-ft. boom and 10-yd. bucket; and 359 ft. with 175-ft. boom and 12-yd. bucket. Digging depths range up to 141 ft.

EASILY MANEUVERED into best working position with exclusive Bucyrus-Erie walking mechanism.

ALL-WEATHER WORKER — Bearing area is large to permit working on soft ground. Weight and loads are balanced so center of gravity shifts through limited range, keeping base rim pressures low.

MAIN MACHINERY IS SIMPLE, and is firmly held in alignment on strong frame. Minimum of moving parts means low maintenance.

ALL-WELDED, TUBULAR-BRACED BOOM provides plenty of strength without excess weight.

BIG OUTPUT results from dependable, year-round performance, fast moves, and rapid work cycle.

You are invited to send for additional information on how the 480-W can help you solve stripping or other long range excavating problems.

BUCYRUS ERIE

46L53C

BUCYRUS-ERIE COMPANY SOUTH MILWAUKEE, WISCONSIN

trouble takes a five year holiday

at Williams Lime Manufacturing Company, with the help of

Gulf Quality Lubricants *and* Fuels

The engine in this shovel operates at the rate of 68 hours per week—and has done so for five years without requiring an overhaul. This is a typical performance record of all Williams Company's equipment during the more than 25 years that Gulf products have been used by this progressive Knoxville, Tennessee firm.

Williams gives Gulf lubricants and fuels much of the credit for low maintenance costs and dependability of equipment.

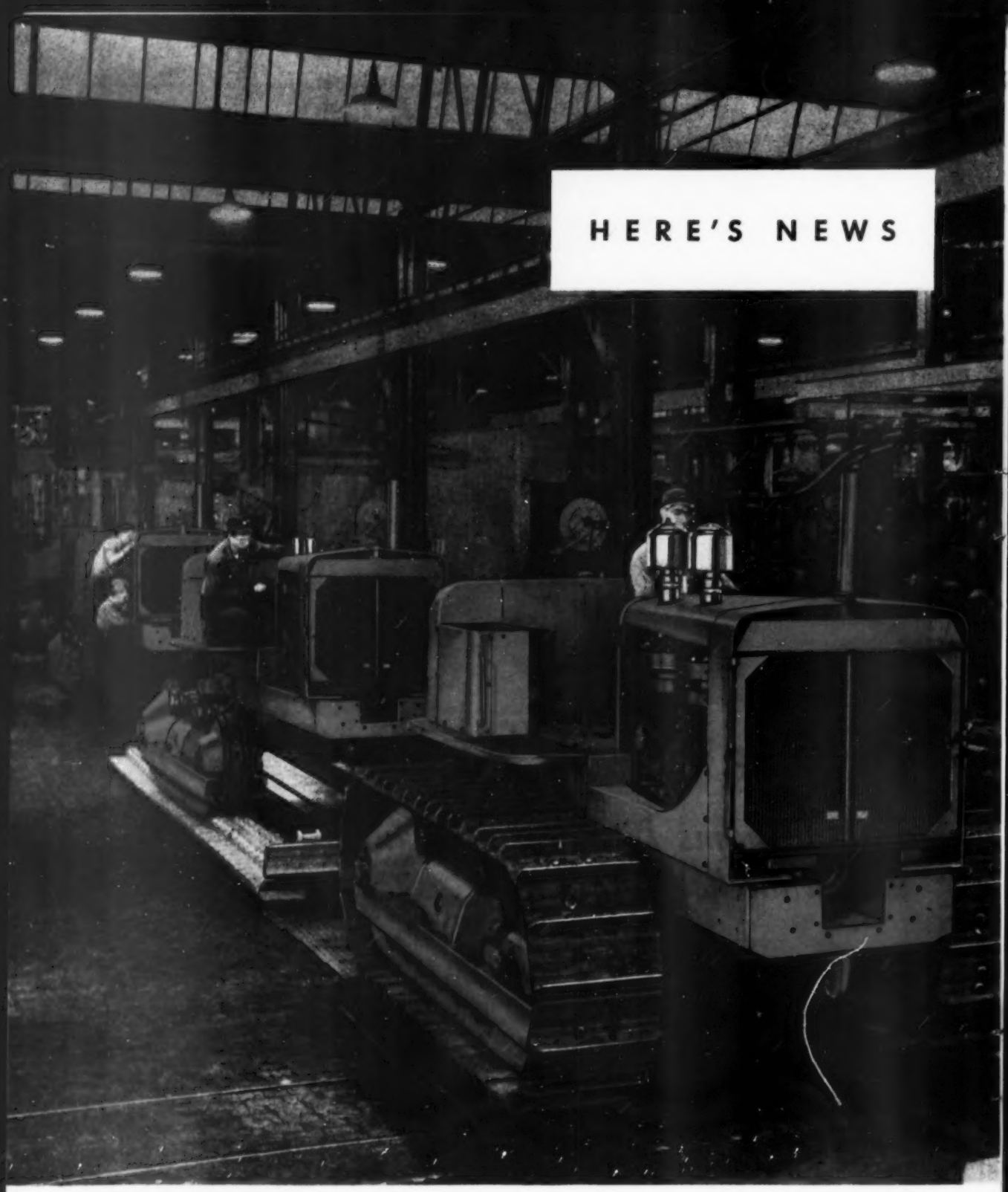
Gulf's quality products and expert engineering service help many companies reduce maintenance costs and gain a smooth over-all operation.

Why not call your nearest Gulf office now, for complete details on Gulf products and engineering service?

Gulf Oil Corporation • Gulf Refining Company

Room 1822 Gulf Building • Pittsburgh 30, Pa.

GULF



They're here now! **28,000-lb. HD-15's with torque converter drive are already rolling off the assembly line.**

Allis-Chalmers Powerful HD-15 adds to its big work advantages

. . . now offers choice of two outstanding drives—

standard transmission with time-saving shift pattern,

or widely accepted hydraulic torque converter drive

From its introduction, the Allis-Chalmers HD-15 has set new standards in performance and long-life service . . . in a new size class. It combines outstanding strength and balance with plenty of power, plus a simplified, time-saving transmission that gives big work output. In addition, the HD-15 offers remarkable service simplicity, with features like unit assembly and 1,000-hour lubrication intervals for truck wheels, idlers, and support rollers. It has proved itself the kind of tractor required on today's jobs.

Now, hydraulic torque converter drive is added as optional equipment — an additional working advantage for the powerful HD-15. This advanced design drive was introduced by Allis-Chalmers in the world's *first* torque converter tractor nine years ago. This modern drive gets more done because it automatically provides the right combination of speed and pull every working minute . . . and hydraulic cushioning assures longer life for both tractor and auxiliary equipment.

Now you can choose the HD-15 with standard transmission *or* hydraulic torque converter drive. Either way you'll be getting the most advanced tractor in the business. Let your Allis-Chalmers dealer give you *all* the reasons why.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

TORQUE CONVERTER

Symbol of greater output, longer life.

NOW!

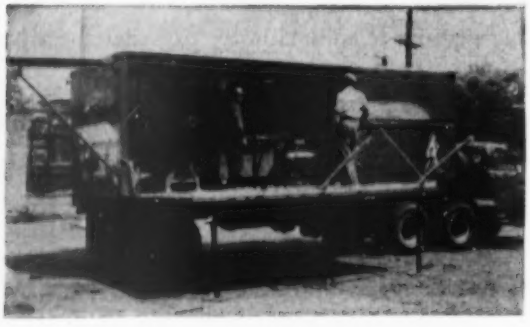
you can get big drill performance with the

CHALLENGER
Blast Hole Drill

HERE'S WHAT USERS SAY:

"Drilling cost per ton of ore broken reduced by two-thirds over wagon drills. Driller experience can further reduce to one-sixth of wagon drilling cost."

"Punched down four 60′ holes, bottoming at 4″ dia., in one shift. What a drill!"



SPECIAL DRILL AND STEEL SERVICE

The size of the Challenger Drill and the sectional steel used with it, makes necessary special drill and steel service which is provided by Joy. Service trucks, like the one shown here, make periodic visits in areas where Challenger Drills are operating. The operators of this "mobile shop" are experienced drill doctors who furnish complete drill steel service, bit sharpening service, drill inspection, and suggestions for use and application of the drill for best results.

Users' reports on early units show that you really get big drill performance with the Challenger Drill. It's a 5¼" hammer drill (not a piston drill) that drills 4½" diameter holes through hardest rock to depths of 50′ or more. This big drill performance calls for a 26′ feed to cut the number of steel changes, and a self-propelled mounting. Tractor-mounted on rubber tires with a portable compressor to furnish air for drilling, the Joy Challenger is the biggest cost-cutting big drill for hard rock drilling. Check your needs . . . see if this big drill won't answer your problems. ● ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

Consult a Joy Engineer

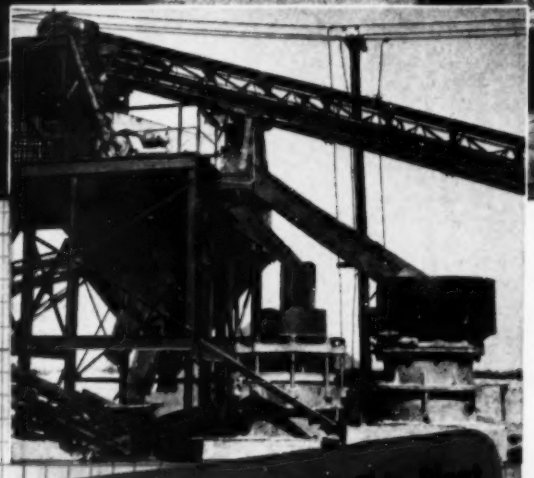
JOY

WORLD'S LARGEST BUILDER OF CORE DRILLS, ROTARY BLAST HOLE DRILLS AND MOTORIZED DRILL RIGS

W&D C 4038

TELSMITH ENGINEERED

for High Capacity... and Super Flexibility



TELSMITH Equipment in This Plant

One (1) 36" x 6' Heavy-Duty Plate Feeder
One (1) 5' x 12' Heavy-Duty 2½-Deck Scalping Screen
One (1) 16-B Gyratory Crusher
One (1) 48-S Gyrasphere Crusher
Five (5) Vibro-King Finishing Screens 5' x 12', 4' x 12', 4' x 10' Triple Deck, 4' x 12' Double Deck
Nine (9) Telsmith-BG Conveyors 30" to 18" wide and 866' to 45' long

Barbers Corners Crushed Rock, Washed Sand and Gravel Plant of the Elmhurst-Chicago Stone Co., Elmhurst, Illinois. (Top) one of several Telsmith Vibro-King Screens; (left) Telsmith Scalping Screen, Gyratory and Gyrasphere Crushers.

FIVE-WAY EFFICIENCY—(1) High Capacity . . . (2) Super Sizing-Flexibility . . . (3) Simplified, Automatic Controls . . . (4) Large Storage Capacity . . . (5) Fast Truck-Loading . . . makes this plant unique. Because it is not only Telsmith engineered but largely Telsmith equipped.

THREE-SECTION DESIGN — This outstanding sand and gravel plant can produce—In Section One, minus 1" pit-run road gravel. In Section Two, four sizes of washed gravel, and sand. In Section Three, five sizes of crushed gravel and one of aglime. This three-section plant consistently and economically produces 350 tons per hour.

CONSULT TELSMITH ENGINEERS for newest developments in aggregate production. Send for Bulletin 266.

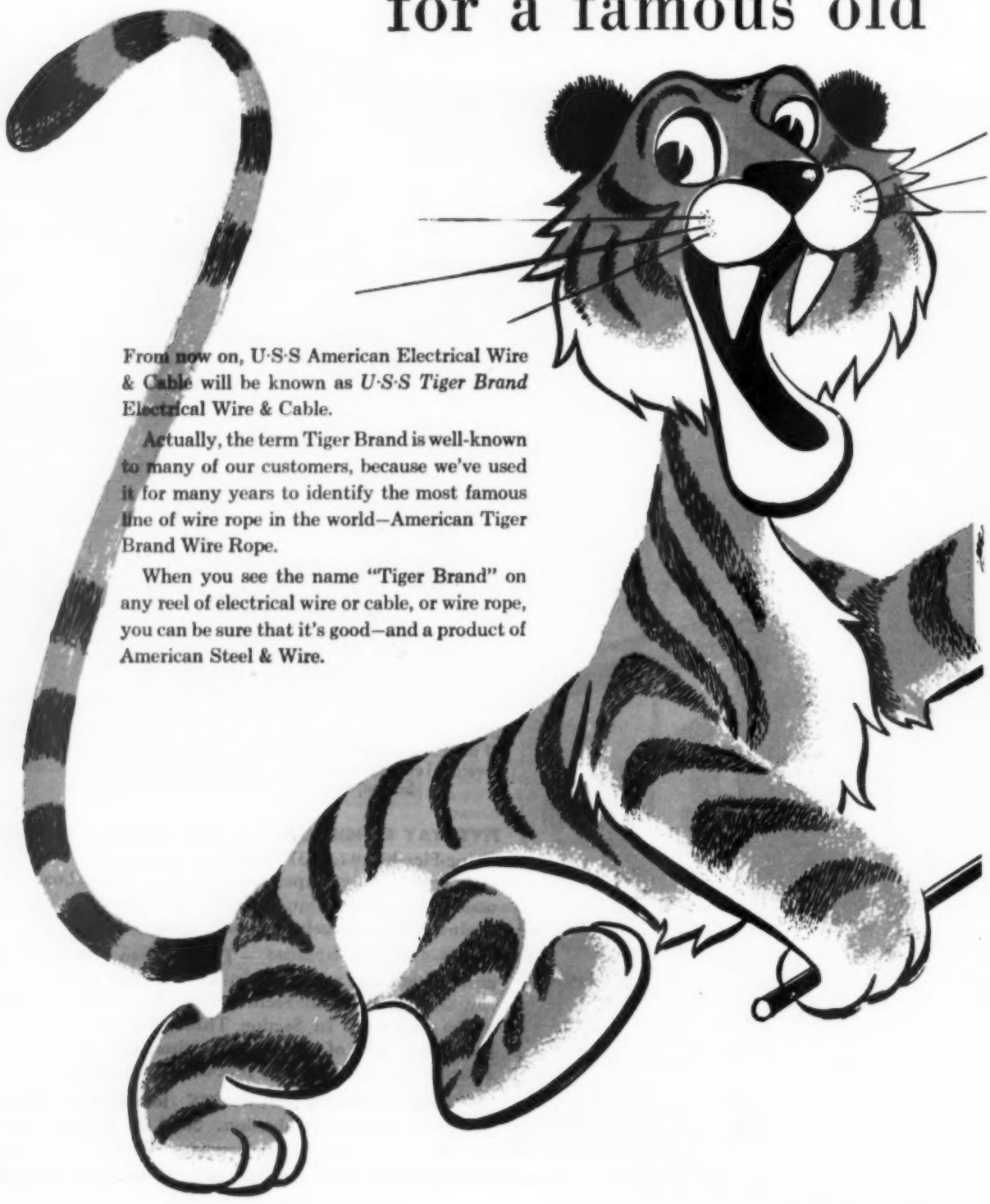
SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17 — 211 W. Wacker Dr. Chicago 6, Ill. — 713 Commercial Trust Bldg. Philadelphia 2, Pa. — 238 Main St. Cambridge 42, Mass. — The McLean Co. Cleveland 14, Ohio

Rish Equipment Co. Charleston 22, S.C. & Clarksburg, W.Va. — Rish Equipment Co. Roanoke 7, & Richmond 10, Va. — Interstate Eqpt. Co. Statesville, N.C.

a brand new name for a famous old



From now on, U·S·S American Electrical Wire & Cable will be known as *U·S·S Tiger Brand* Electrical Wire & Cable.

Actually, the term Tiger Brand is well-known to many of our customers, because we've used it for many years to identify the most famous line of wire rope in the world—American Tiger Brand Wire Rope.

When you see the name "Tiger Brand" on any reel of electrical wire or cable, or wire rope, you can be sure that it's good—and a product of American Steel & Wire.

line of wire and cable

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CLEVELAND, OHIO

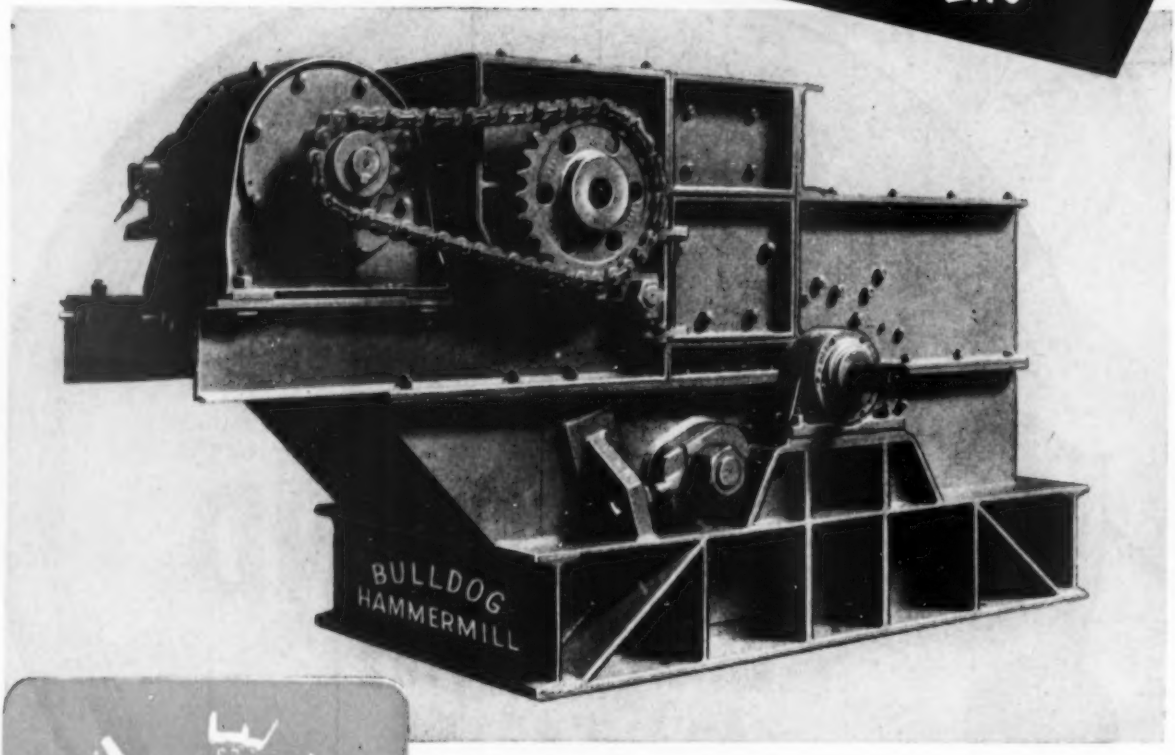
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

BULLDOG HAMMERMILLS

Assure Rock Plants.....

Twice the Capacity with 15 Times Longer Hammer Life*



STATIONARY BREAKER PLATE TYPE FEATURES
PETTIBONE Manganese Steel Hammers, Liners, Cage Bars, and Adjustable Breaker Plate
1 TO 1000 TONS PER HOUR CAPACITY

*ASK FOR PROOF OF MONEY-SAVING USES FOR PRIMARY, SECONDARY AND FINE REDUCTION

No hammermill offers as much production and operating efficiency as the BULLDOG! That's why operators who have checked them all know the BULLDOG'S exclusive non-clog feature of the Moving Breaker Plate reduces slow-downs and costly maintenance for high moisture materials. The Stationary Breaker Plate has no equal for dry materials. The BULLDOG Hammermill has the greatest hammer life of any hammermill. Write for Bulletin A today.

HAMMERMILLS, INC.

4700 WEST DIVISION STREET
CHICAGO 51, ILL. • SPaulding 2-9300

Subsidiary of PETTIBONE MULLIKEN CORP.

One of approximately 1200 on the Minnesota Iron Ranges, this 34-ton "Euc" is loaded by a 5 cu. yd. shovel at a large open pit operation. Rear-Dump models are available with semi-rigid or spring mounted axles, Allison Torqmatic drives and transmissions, or conventional 5 and 10 speed transmissions.

More Profit with "Eucs" in Mines and Quarries

■ Built for tough off-the-highway service, Rear-Dump and Bottom-Dump "Eucs" and Euclid Scrapers are cutting the cost of moving ore and overburden, sand and gravel, and stone on quarry and mining operations. Big payload capacity, fast travel speed and high job availability add up to more loads per hour and lower cost per ton or yard hauled.

■ Your Euclid Distributor will provide a hauling production and cost estimate for your operation . . . there's no obligation so get in touch with him soon. Have him show you how Euclid equipment can improve your profit picture.

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

This Bottom-Dump "Euc" is being loaded with 17 cu. yds. of sand and gravel from an overhead hopper for haul to the washing plant. Owner is Interstate Sand and Gravel of Covington, Ohio.

Ideal Cement Co. of Portland, Colorado uses 22-ton Rear-Dumps with quarry bodies to haul stone from the face to the crusher. Top speed of this Model 36 TD, with full payload, is 32.5 m.p.h. Spring mounted drive axle and Allison Torqmatic drive and transmission are important factors in stepping up production and profits at this quarry operation.

Euclid Twin-Power Scraper stripping overburden at a large gypsum quarry in Iowa. Powered by two 190 or 200 h.p. engines with torque converters and semi-automatic transmissions, this "Euc" self loads, has a struck capacity of 18 cu. yds. and travels up to 30 m.p.h. with full payload.

EUCLID THE PIONEER

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

This is only one of two identical Calusco crushing plants located at separate quarries. Capacity 2000 metric tons daily.

Italcementi Twin Crushing Plants for Calusco

Equipped by KENNEDY...

IT COSTS LESS.. TO OWN THE BEST!

KENNEDY - VAN SAUN
MANUFACTURING & ENGINEERING CORPORATION
TWO PARK AVENUE, NEW YORK
FACTORY DANVILLE, PA.

EACH PRODUCING 1200 METRIC TONS DAILY OF HIGH QUALITY, UNIFORM CEMENT

KVS engineers handled this job from plant layout and flow charts to the designing, building and installing of all major machinery and equipment.

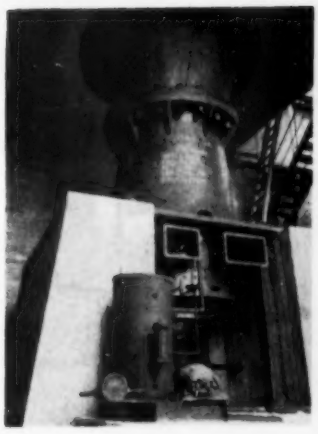
Two of the best equipped cement plants in the world, the twin CALUSCO plants were designed to deliver sufficient crushed and sized limestone for an ultimate capacity of 200 metric tons per day of Portland cement clinker.

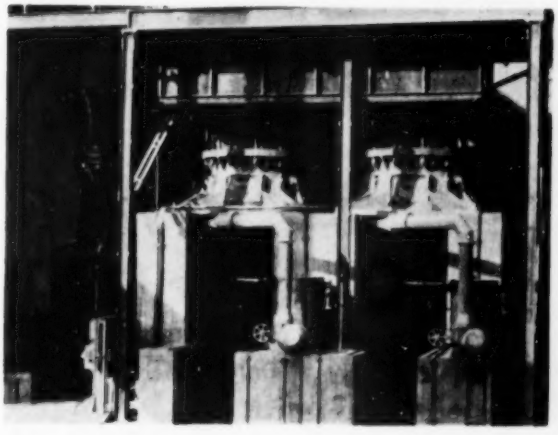
KVS machinery was selected in preference to all other makes of cement equipment as best suited to do the work required. Operating records show that the estimated capacity is being exceeded, maintainence costs held to a minimum and quality standards of cement above required minimum.

Look to Kennedy, **first**, for the best in cement, crushing and mining machinery. Over a half-century of engineering leadership is at your disposal.

Primary gyratory crushers installed at both Calusco crushing plants.

Secondary crushers installed at both Calusco crushing plants.





WORLD FAMOUS

KENNEDY

MACHINERY & EQUIPMENT

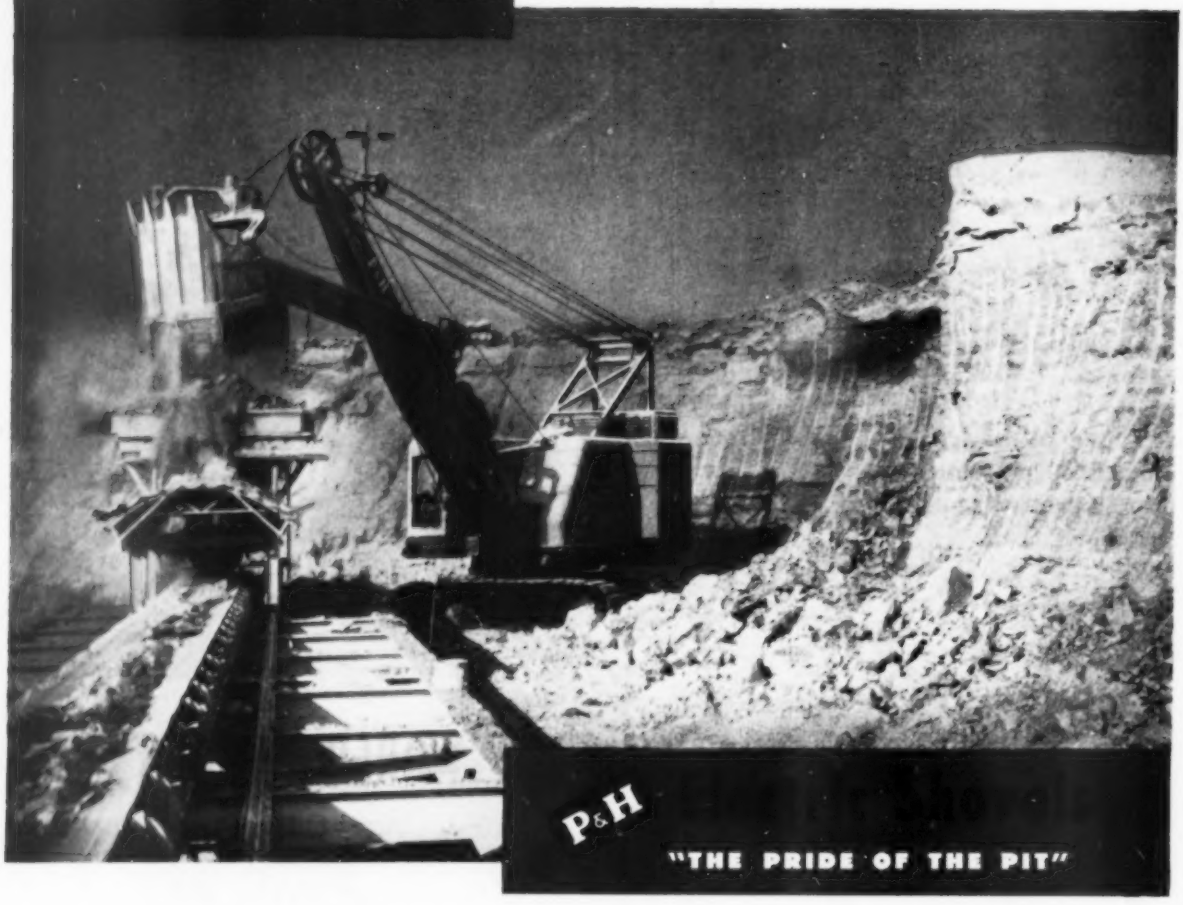
Double discharge gyratory crushers	Fans - Blowers
Swing Jaw Crushers	Air Swept Tube Mills
Slugger Rolls	Rod or Ball Mills
Rotary Kilns	Vibratory Screens
Coolers - Dryers	Rock Feeders
Classifiers	Pre Heaters . . . Deheaters
Hydrators	Pulverized Coal Firing Systems

Pneumatic Transport System

SEND FOR LITERATURE DESCRIBING *KVS* MACHINERY & EQUIPMENT

SULPHUR

500 long tons an hour!



Here at the Freeport Sulphur Company in Louisiana, three P&H 3½-yd. Electric Shovels work an average of 18 hours a day to handle the entire output of the Grande Ecaille Mine. 500 tons of sulphur are loaded every hour by each of the three P&H 3½-yd. shovels.

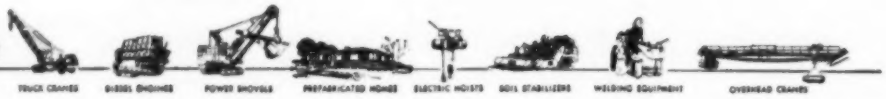
Why does Freeport go P&H? One big reason is that only P&H Magnetorque* eliminates both friction clutches and DC commutators . . . big maintenance headaches anywhere, especially where corrosive atmospheres exist. And, electrical equipment is designed throughout for shovel service — *not adapted for it*. That's another important factor that means lower tonnage costs in any kind of open pit work.

We have many interesting facts about low-cost production in your type of work . . . facts that will explain why every third P&H Electric Shovel sold is a repeat order. Write us.

*T.M. of Harnischfeger Corporation for electro-magnetic type coupling.

P&H LARGE EXCAVATOR DIVISION
HARNISCHFEGER CORPORATION
MILWAUKEE 46, WISCONSIN

the P&H *Line*



THE NEW CATERPILLAR D8 TRACTOR

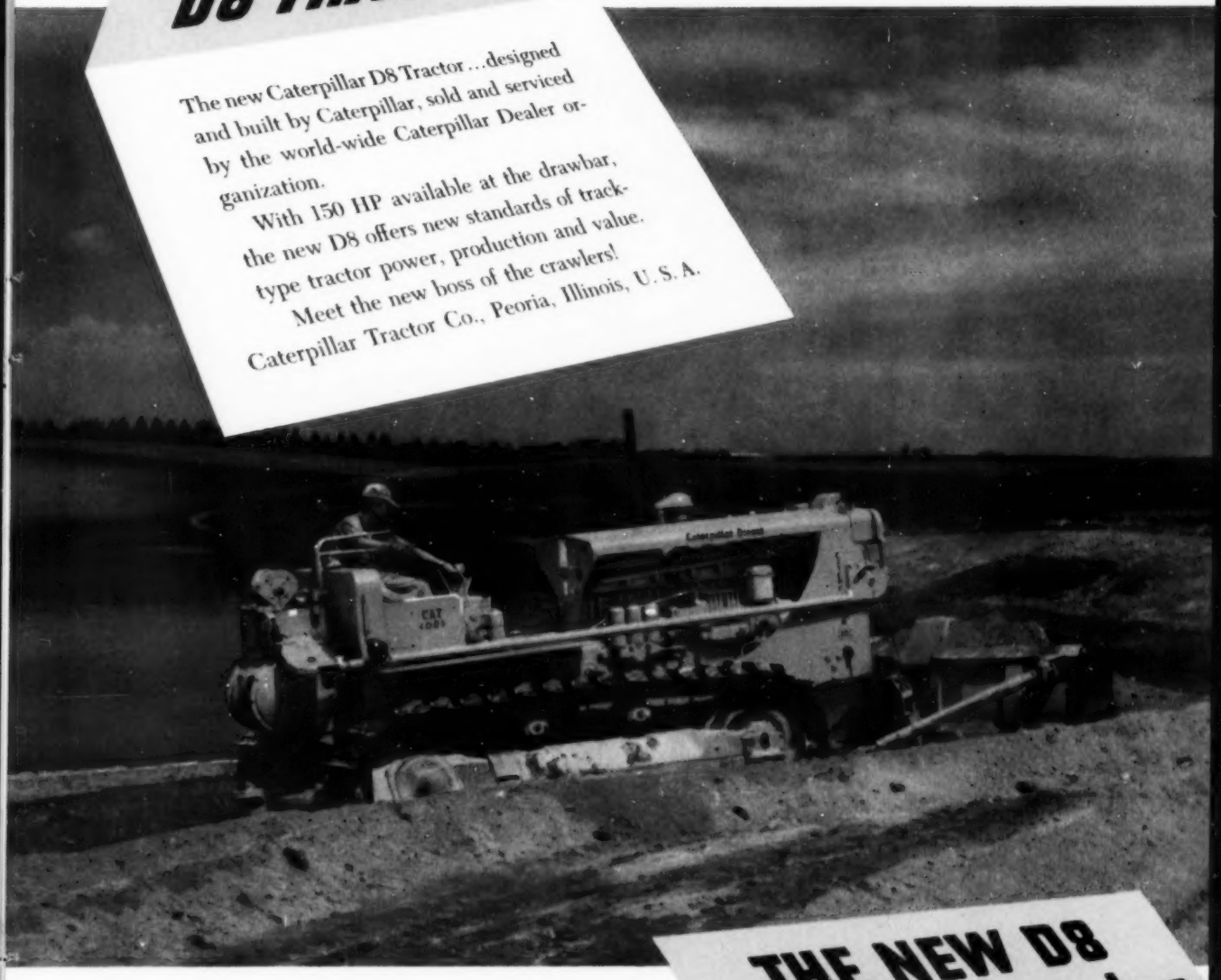
More Power... More Profit... More Production...

The new Caterpillar D8 Tractor ...designed and built by Caterpillar, sold and serviced by the world-wide Caterpillar Dealer organization.

With 150 HP available at the drawbar, the new D8 offers new standards of track-type tractor power, production and value.

Meet the new boss of the crawlers!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



THE NEW D8 Boss of the Crawlers

- The new D8 has more drawbar horsepower...horsepower that works for you.
- The new D8 is compact...it retains the maneuverability needed in tractor applications.
- The new D8 is versatile...matched to Caterpillar-designed Bulldozers, Scrapers, Rippers and Pipe Layers.
- The new D8 is also a pusher...available attachments make this machine a powerful push tractor.

CATERPILLAR

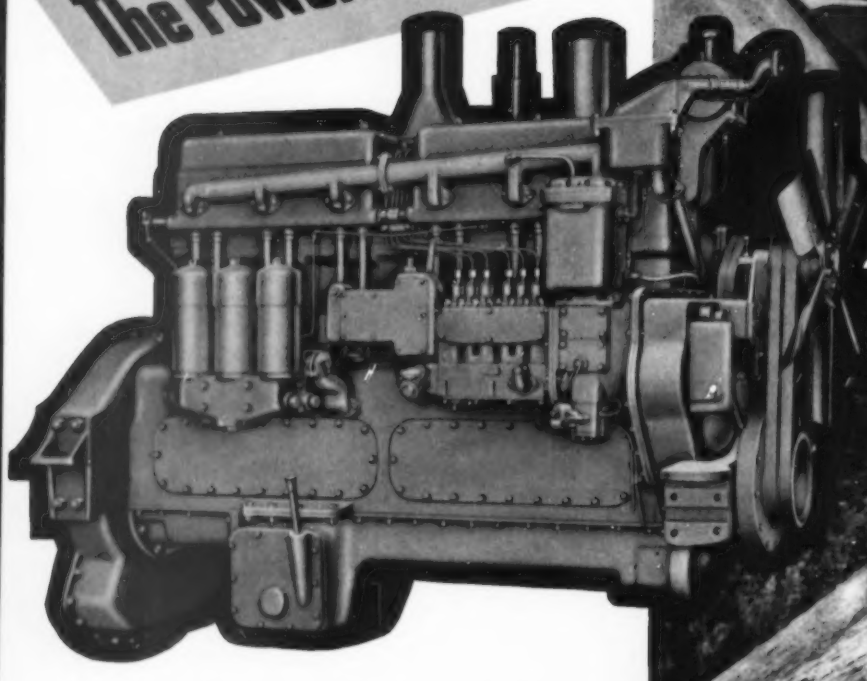
REGISTERED TRADE MARK ®

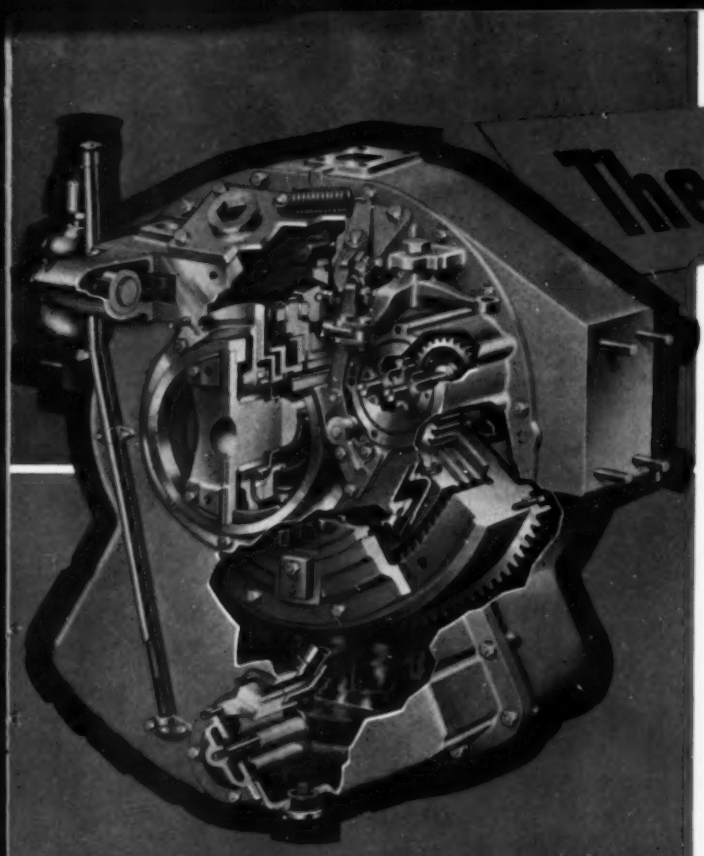
150 Drawbar Horsepower Provided by Caterpillar D8 Engine

The new high performance of the Caterpillar D8 Tractor stems from the 185 HP, 1200 RPM diesel engine. Important new features, built into the time-tested and job-proved Caterpillar design, contribute to longer engine life and decreased operating costs as well as higher power. Some of these features are: new cylinder head incorporating valve rotators and hardened valve seat inserts, new camshaft, aluminum alloy pistons with stainless steel heat plug in the high temperature zone and a cast-in iron band for the top piston ring groove. A larger oil pump driven from the front of the crankshaft has an exclusive throttling valve pressure control which assures correct lubrication for all moving parts from the first turn of the crankshaft.

This powerful engine, with these and many other advanced features, is one of the big reasons why the D8 gives you more value than ever before.

The Powerful D8 Engine





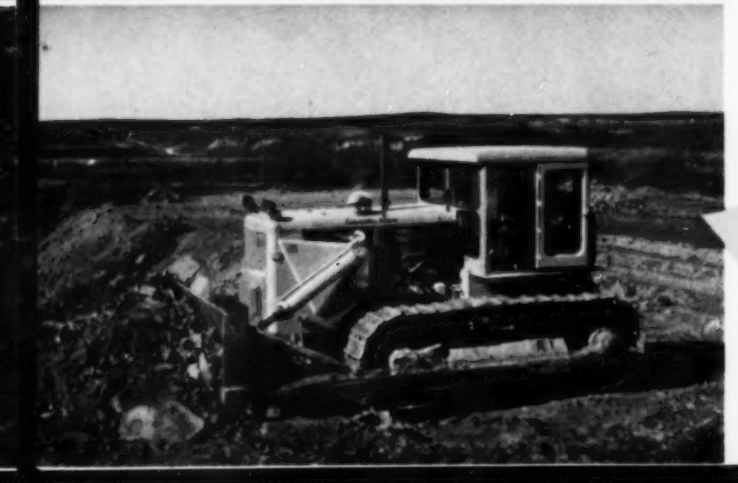
The Oil Clutch

Exclusive with Caterpillar Profitable to You...

Only Caterpillar offers you the long life and low maintenance cost of the oil clutch. The outstanding feature of this advanced clutch is that oil films absorb the friction and heat. The metallic friction surfaces do not come into contact until the last revolution or two before engagement. The clutch has its own lubrication system with gear-type pump and suction screen. The pump supplies oil under pressure to the hydraulic booster, which makes the clutch exceptionally easy to operate. Oil is also delivered to the inner diameter of the three clutch plates. This continual lubrication and cooling is the principal reason for much longer periods between adjustment and replacement than is possible with the conventional dry clutch. The oil clutch is another big reason why the D8 is a better buy.

THE NEW D8 GIVES YOU...

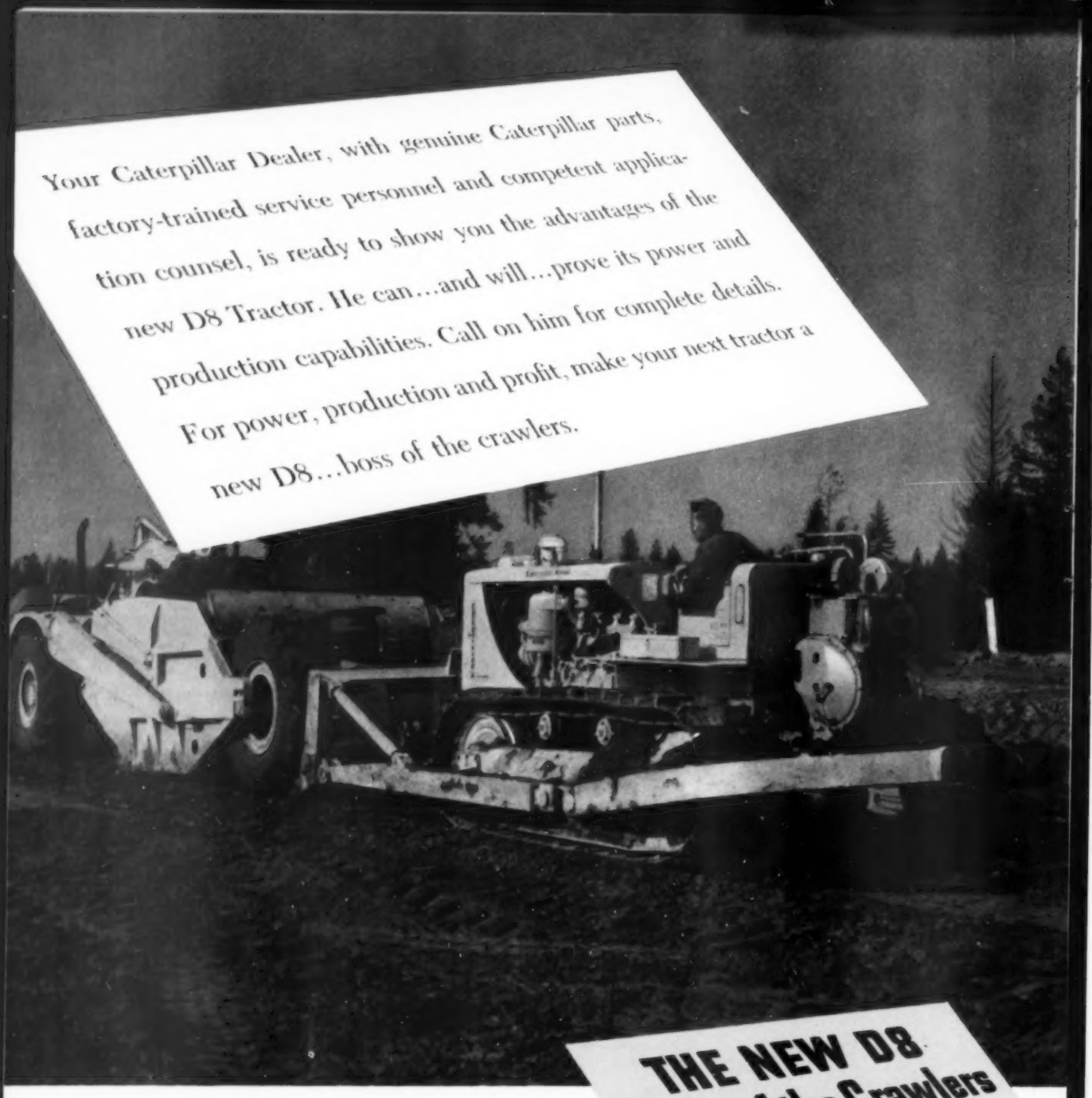
- **150 Drawbar Horsepower**
- **New Long Life Engine Features**
- **Exclusive Oil Clutch**
- **Flywheel Clutch Booster**
- **New High-Strength Frame**
- **"Hi-Electro" hardened track grouser tips**
- **Self-energizing Steering Clutches**
- **New, Large Air Cleaner**
- **Weight 38,155 lbs. (shipping weight)**
- **Compact Fuel Injection Equipment**
- **Double Universal Joint to Protect Clutch and Transmission Bearings**



Caterpillar

REGISTERED TRADE MARK ®

THE NEW D8
Boss of the Crawlers


Your Caterpillar Dealer, with genuine Caterpillar parts, factory-trained service personnel and competent application counsel, is ready to show you the advantages of the new D8 Tractor. He can...and will...prove its power and production capabilities. Call on him for complete details. For power, production and profit, make your next tractor a new D8...boss of the crawlers.

THE NEW D8
Boss of the Crawlers

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

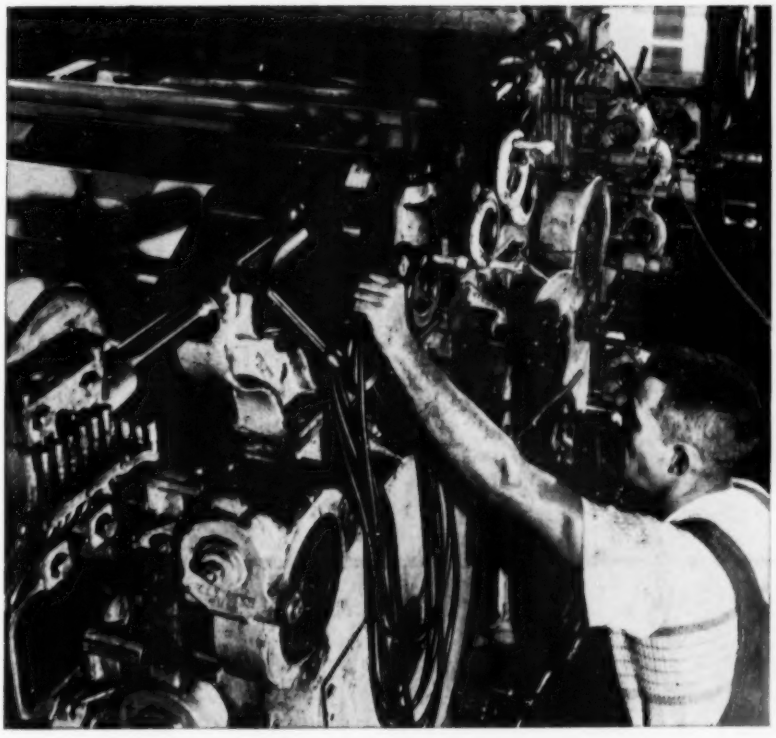
The new Caterpillar D8 Tractor offers new highs in earthmoving production in push-tractor operations. The D8, equipped with No. 8S Bulldozer, heavy duty track roller guards, crankcase guard and tandem pusher frame, will cut your work cycles to a minimum.

Fast and maneuverable, the D8 applies a full 150 HP to the job of loading your hauling units in new record times. Push-loading, singly or in tandem, is provided to meet the conditions of your job.

PRINTED IN U.S.A.

No. 3 of a series

How Bemis makes GOOD multiwall bags for you



As with other types of printing, there is no substitute for experience in multiwall paper bag printing. A typical Bemis pressman is Wesley Pitcher, shown here at the 4-color press he operates at the Bemis plant in Peoria. Wesley went to work in the printing department 21 years ago and has been a pressman for 18 years.

Good bag printing requires *three* things . . . and Bemis has 'em!

Good multiwall bag printing . . . the kind that makes your brand a star salesman . . . requires good presses, good plates and good workmen. *And Bemis has 'em!*

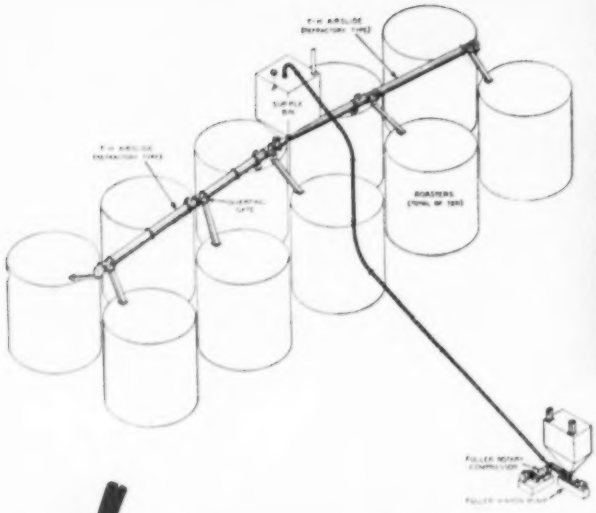
1. Specially designed presses . . . with features needed for *best multiwall printing* . . . are used.

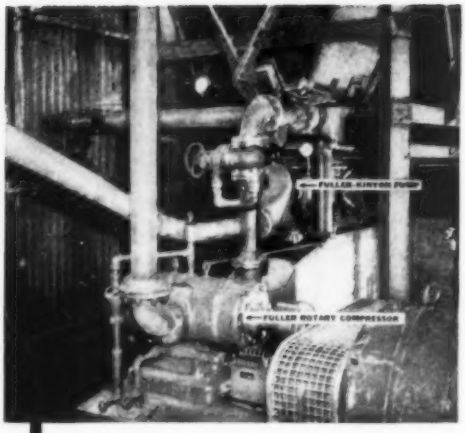
2. Our own skilled, experienced plate makers make our printing plates . . . so we control quality every inch of the way.

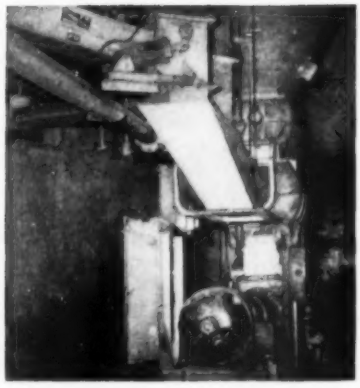
3. Since we have been making and printing quality multiwalls for twenty-seven years, we have trained our pressmen to the point that they do, day in and day out, the best printing in the bag industry.

Bemis

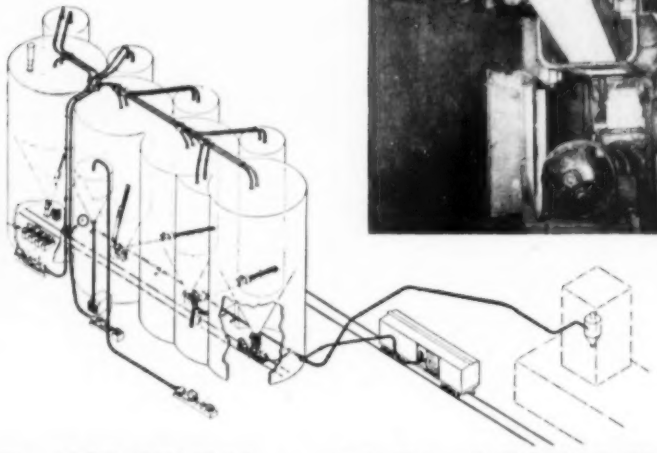
General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities







Hot or COLD



flue dust or talc convey it with FULLER-KINYON CONVEYING SYSTEM & F-H AIRSLIDE®

Fuller
CONVEYS BY
air
CLEAN...SAFE...EFFICIENT

Many conveying problems, heretofore considered impossible and impractical from an economic standpoint, are today being solved by the use of Fuller-Kinyon and F-H Airslide Conveyors, either individually or in combination.

Illustrated are two installations, each made practical and economical by the combination of these two systems . . . advanced designing and know-how by Fuller engineers experienced in the art of air-conveying for over a quarter of a century.

Installation, upper left, conveying hot flue dust. A Fuller-Kinyon Pump conveys from a precipitator to a supply bin. From the supply bin, F-H Airslides convey and control the distribution of the flue dust to roasters, with no dust or loss of material. Material handled has a temperature up to 800 deg. fahr. The pump conveys at rate of 25 tons an hour over a distance of approximately 220 feet.

Drawing, lower right, talc conveying. Fuller-Kinyon Systems convey from pulverizers to storage silos and bins, and from storage to packer bin or bulk-car loading. F-H Airslides convey from flat-bottom storage bins to the Fuller-Kinyon Portable Pump illustrated above drawing.

When it's conveying you need, you need a Fuller engineer to make a study of your requirements. His findings may result in advanced and practical ideas you never anticipated or thought possible. Write for literature on Fuller-Kinyon and Airslide Conveyors.

FULLER COMPANY—CATASAUQUA, PA.

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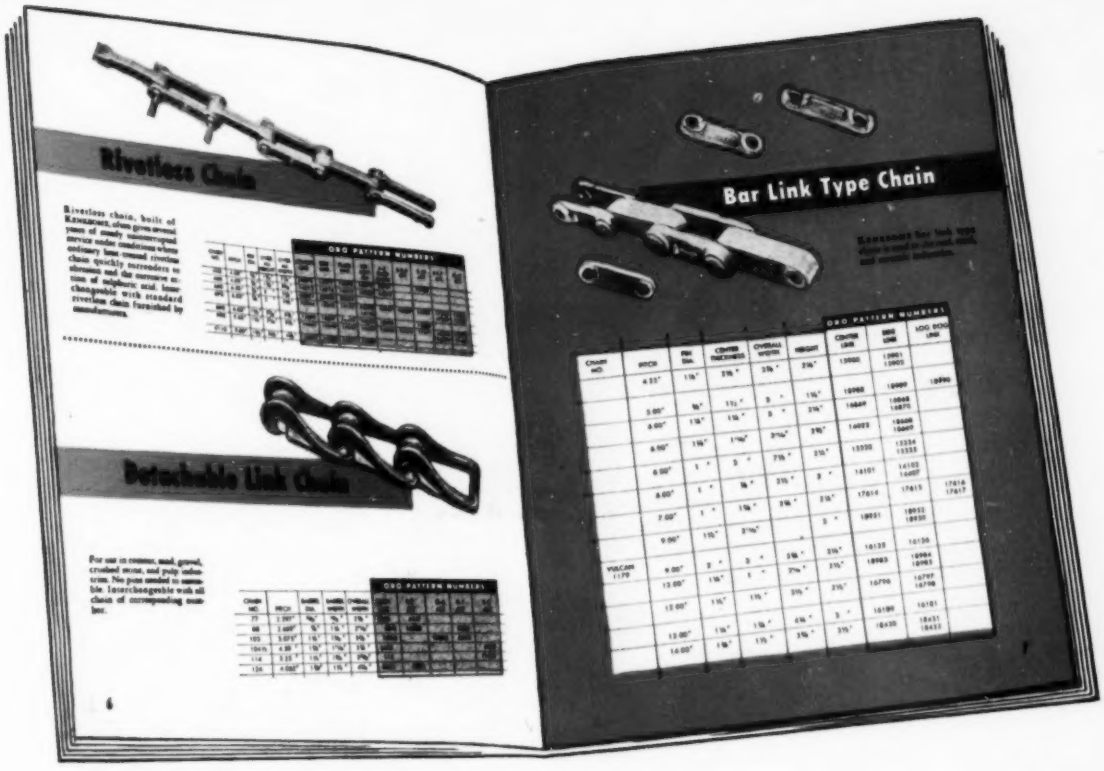
DRY MATERIAL CONVEYING SYSTEMS AND COOLERS . . . COMPRESSORS AND VACUUM PUMPS . . . FEEDERS AND ASSOCIATED EQUIPMENT

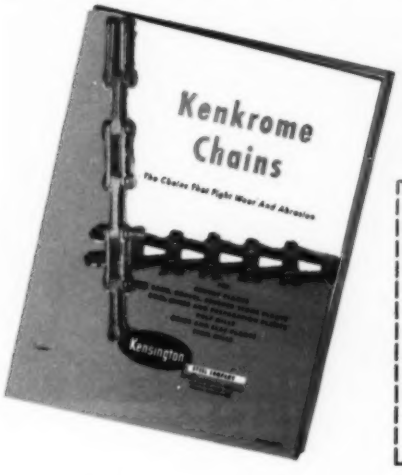


Is wear your enemy?..Then send for this book!

If you are looking for long-lasting chains that defy wear and help you reduce replacement costs, you'll find this new catalog a valuable aid.

KENKROME chains are designed to help you fight wear. *First*, KENKROME is the ideal metal for chains . . . an already-hard manganese alloy steel that grows even harder when it's subjected to wear and abrasion. *Second*, many of the chains described in this catalog are of *improved design* . . . heavier, reinforced, but perfectly interchangeable with the standard chains you are now using.

Pintle, Rivetless, Detachable Link, Combination, Drag, Roller and Bar Link type chains are all described here. Kensington's famous renewable-tooth sprockets, also made from wear-defying KENKROME, are likewise included. In these days of high operating costs, it will pay you to keep this valuable catalog handy for ready use.



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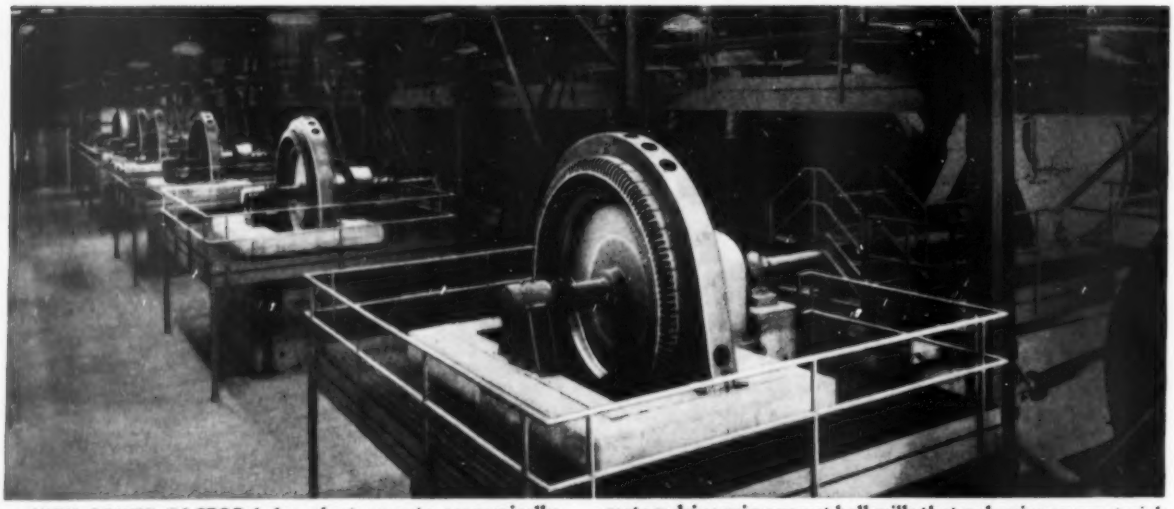
ENGINEERING REPORTS:

1 **ON-THE-SPOT SEPARATION** is done on this barge, which floats in a man-made pond near the Bunnell plant. Walking dragline (in background) dumps sand containing coquina shell into bins. These are five of twelve totally enclosed fan-cooled G-E Tri-Clad* gear-motors that keep conveyor loads moving to the screening process—in this corrosive atmosphere.

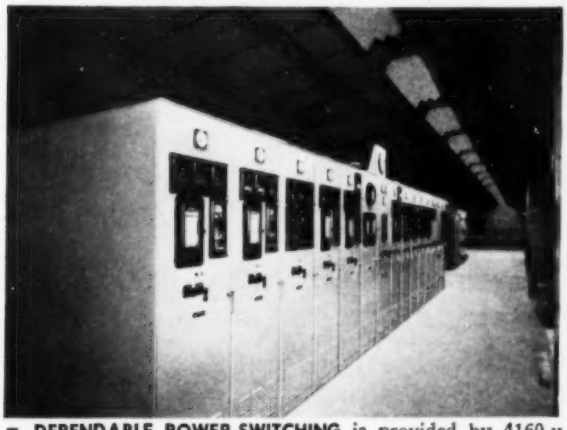
Lehigh Portland Cement Company's



2 **HIGH POWER FACTOR** helps plant operate economically. Three of these 700-hp, 180-rpm, 4000-volt synchronous motors drive primary wet ball mills that pulverize raw material; three others grind cement clinker after burning.

3 **KILN-SPEED CONTROL** over wide range is made possible by G-E adjustable-voltage d-c drives. Each kiln uses a 125-hp motor, and an electrically co-ordinated feeder motor.

4 **RELIABLE POWER SUPPLY** for kiln drives includes G-E 1000-kva load-center substation, two G-E synchronous m-g sets, and a-c and d-c control (background).



5 **DEPENDABLE POWER-SWITCHING** is provided by 4160-v metal-clad switchgear in a pressure-ventilated room. Vertical-lift design means you ***see*** when breaker is disconnected.

6 **CONTINUOUS FLOW** of finished cement through packhouse is aided by this G-E Tri-Clad motor driving bagging machine, and gear-motor driving conveyor for bagged cement.

*Reg. trade-mark of General Electric Company.

new plant powered by G-E system

G-E drives help maintain fast, smooth output of coquina-shell Portland cement

To help relieve the prevailing cement shortage in Florida, the Bunnell plant of the Lehigh Portland Cement Company has been completed with a production capacity of 4000 barrels a day. Here, for the first time in the U.S., coquina shell is being used in the manufacture of Portland cement.

In cooperation with F. L. Smidth & Co. engineers, General Electric cement industry application engineers developed a complete electrical system integrated with each plant process to facilitate a smooth-flowing, continuous operation. Each step, carefully linked with an efficient materials-handling system, is powered and controlled by G-E drives. Success of this coordinated planning is evident with today's fast-moving production flow.

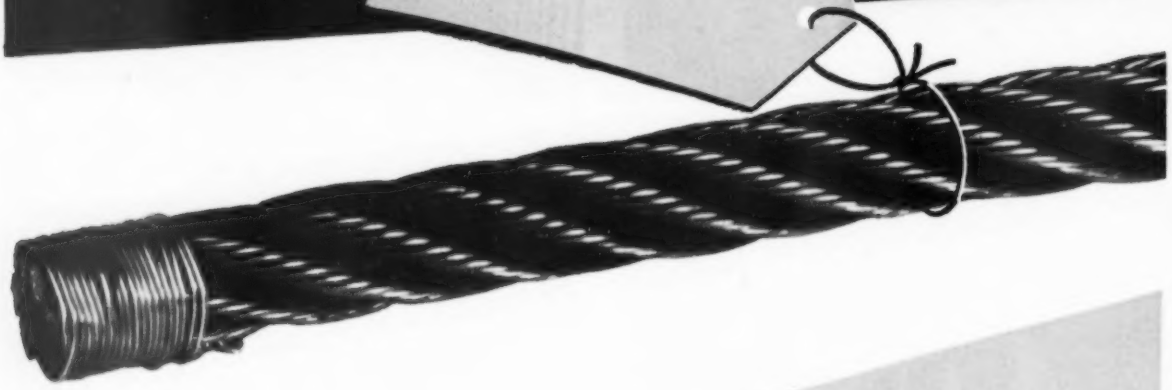
REACH PEAK EFFICIENCY THROUGH ELECTRIFICATION

Use G-E engineering aid early in your electrical modernization planning to avoid production bottlenecks, assure optimum output. Contact your G-E Apparatus Sales Office for Bulletin GEA-5748 or write to General Electric, Section 658-13, Schenectady 5, New York.

Engineered Electrical Systems for the Rock Products Industry

GENERAL ELECTRIC

IMPROVE YOUR WIRE ROPE ECONOMY with Bergen SPECIFIED Wire Rope

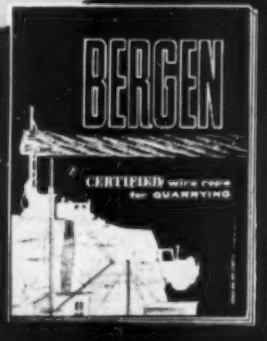


...let Bergen engineers select the most economical rope for your operating conditions

The possible combinations of different wire rope constructions with the many kinds of steel, alloys or other metals, are almost infinite. But for every operating condition there is one choice of wire rope that will cost less, wear longer, serve better than any other.

When you give us the essential details of your operating conditions, Bergen engineers will select the wire rope that will serve you best. Such ropes are marked with Bergen's special SPECIFIED tag. You can depend upon them to give you the maximum wire rope economy for your particular operating conditions.

It pays to buy Bergen's "SPECIFIED" wire ropes.



Write today for Bergen's "Guide to Selecting Wire Rope"

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WIRE ROPE COMPANY 34 GREGG STREET, LODI, NEW JERSEY

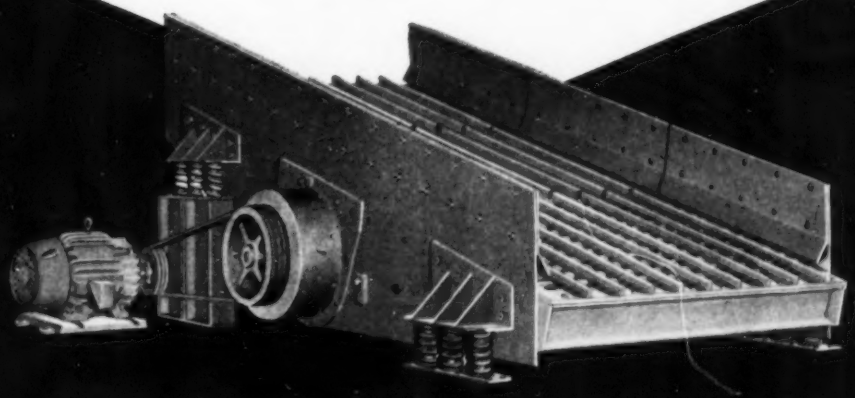
For the best in heavy-duty scalping you need every one of the BIG 4

1 GREAT STRENGTH Massive frame utilizes heavy-section ship channels and H-beam members. Welded deck is securely riveted to thick side plates. Stress-relieved construction easily withstands up to 40-in. boulders dropped from feeder.

2 HIGH CAPACITY Efficient vibrator mechanism permits screening extremely high capacities of sticky ore. Deck can be grizzly or perforated plate, furnished in welded carbon or cast abrasive-resistant steel.

3 EFFECTIVE SEPARATION All vibration is isolated from foundation by large, square-end helical springs and is concentrated in the live deck for thorough action of deepest bed.

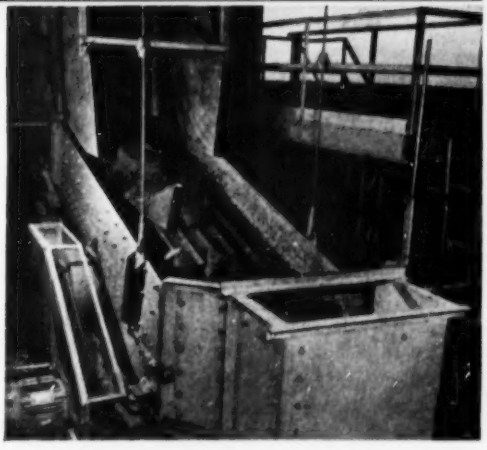
4 TROUBLE-FREE OPERATION Automatic controls limit motion during acceleration and deceleration. Over-size, self-aligning roller bearings and hydraulic bearing removal device.



New LINK-BELT vibrating screen combines all the features essential to low-cost ore handling

LINK-BELT designed and built this heavy-duty scalping screen to the specifications of the men who will use it. Efficient sizing action has been combined with the ruggedness necessary for severe service to produce a screen of the caliber required to do your job.

This new screen can improve your operation by effectively keeping fines out of your primary crushing circuit without being a bottleneck. Ask your Link-Belt representative for all the facts or write for Folder 2461.

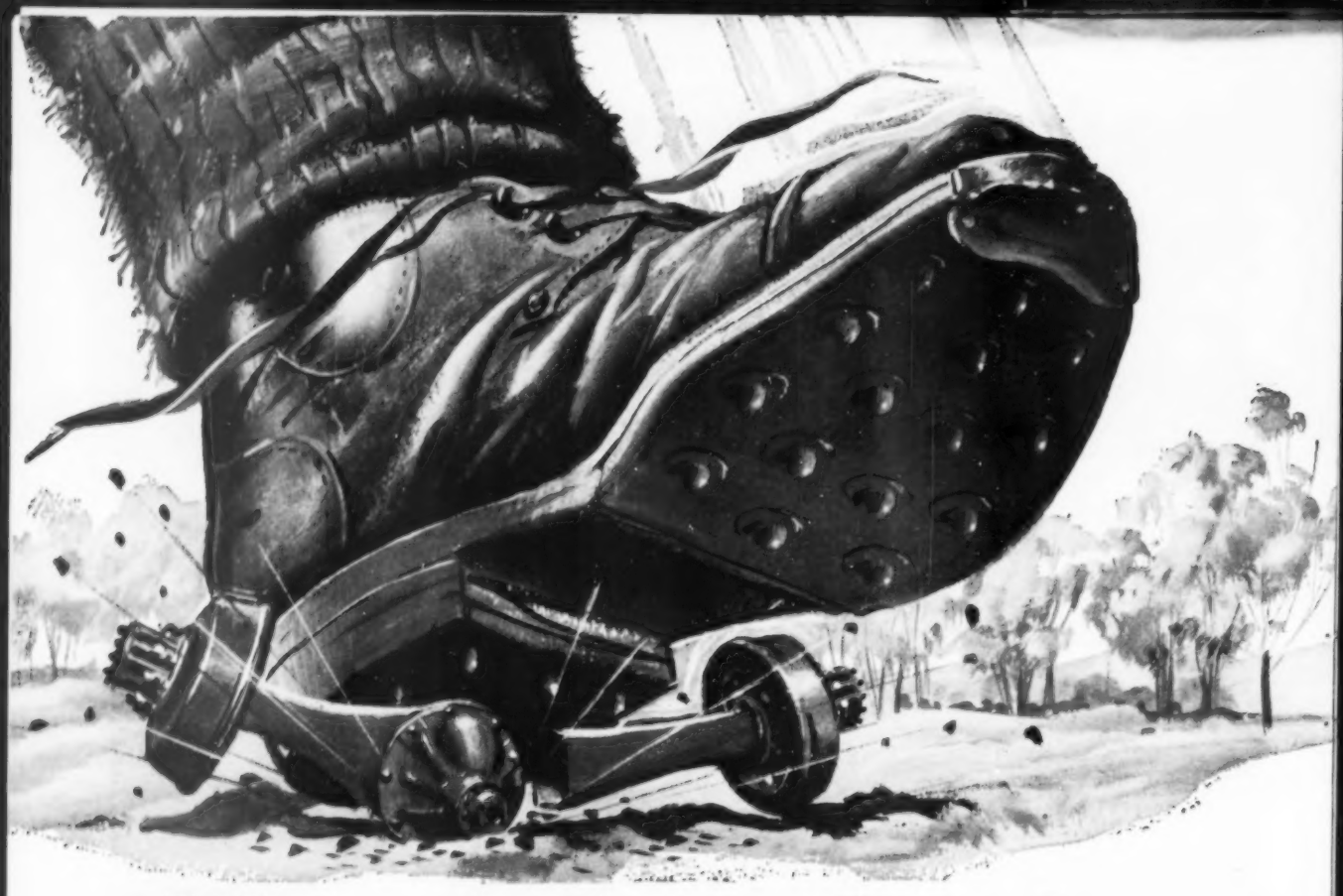


Link-Belt heavy-duty scalping screen provides high-capacity sizing at this Minnesota iron ore operation.

LINK-BELT

VIBRATING SCREENS

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, Duluth 2, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa), Sydney (Australia). Offices in Principal Cities. 13 329



We grind truck axles to

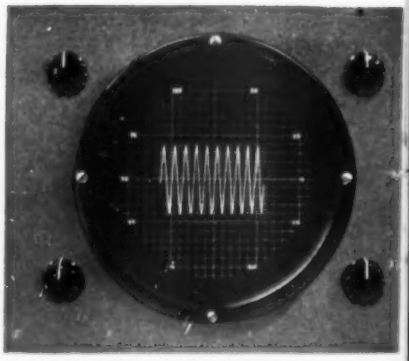
in the new Timken-Detroit indoor proving ground . . . and only

We jounce, twist and grind them. We abuse, torture and ruin them. We duplicate any on-the-job hauling situation . . . then add several special brutal tests of our own.

And for good reasons! We can assure you in advance that a Timken-Detroit axle can take a harder beating on the job it was built for than any other axle made!

We capsuled a multi-thousand acre proving ground into one room. Here our engineers put 50 years of experience in building axles for trucks, buses and trailers to work. Here the axles and gearing are subjected—*indoors*—to any *outdoor* hauling condition . . . and scientifically analyzed.

It's research to the "umpteenth" degree. But *you* enjoy: longer truck life; less maintenance, repairs and downtime; lower operating costs. That's why the smart money of truck builders and owners rides on Timken-Detroit axles and gearing.



Whatever you haul . . . simulated service conditions show up electronically on a screen like this. For instance—a heavily loaded truck on a bumpy, twisting road—then on a level express highway or long grade. What happens to the axle and gearing is measured, charted with absolute scientific accuracy.

TDA proves axle quality and performance in this "Torture Chamber"

Here we simulate actual highway conditions . . . test quality and performance of axles under any hauling situation, such as duplicating the kinetic energy of 80,000 lbs., G.C.W., at 60 m.p.h. All tests are repeated hour after hour with an automatic cycling control.

You're hauling overburden . . . you want axles that can get you up, out and on the road – fast . . . with few shifts, low engine r.p.m. and skimpy gas consumption. You want to stay on the job . . . with little expense for maintenance or repairs plus long axle life. You want Timken-Detroit "Torture-Tested" axles with Hypoid gearing!

You're hauling wet concrete . . . you can't afford axles that "conk out" enroute. You want axles you know *for sure* will take off and get the mix to the job – *on time* – ready to pour. You don't want costly maintenance and repairs or shoptime. You want rugged Timken-Detroit "Torture-Tested" axles with Hypoid gearing. They save you money.

You're hauling sand . . . you want axles that can get the load up and out of anywhere . . . then speed it to the dumping area and get back quick. You don't want to beat your engine to death . . . or have profit-eating maintenance, repairs or downtime. You want axles that can stand up – Timken-Detroit "Torture-Tested" axles with Hypoid gearing.

pieces

Timken has it!

TIMKEN *Detroit* **AXLES**

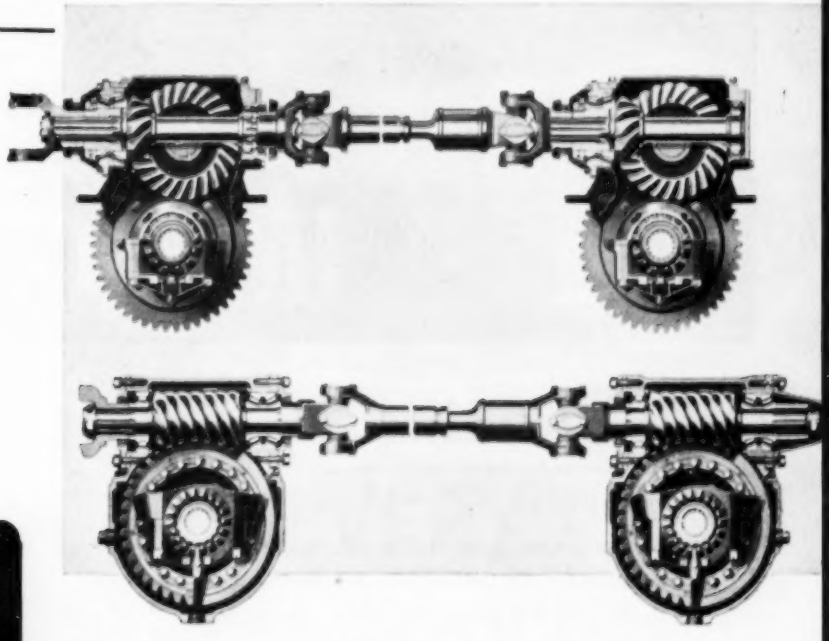
TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN

The Accepted T D A Standard

TRADE MARK REGISTERED

"TORTURE-TESTED"
to Save Money on the Job

WORLD'S LARGEST MANUFACTURERS OF AXLES FOR TRUCKS, BUSES AND TRAILERS



For "Million Mile" performance . . . your choice of two types of Timken-Detroit Tandem Drive Rear Axle Units

1. Top-mounted hypoid-helical double-reduction final drive. First reduction is hypoid gear and pinion – second is helical spur-gearing. Hypoid gearing, developed for heavy-duty trucks by Timken-Detroit, assures outstanding performance and low maintenance costs for operators everywhere. Large pinions, greater tooth contact give TDA hypoid-helical gearing the ability to stand the "gaff" of extreme shock loads and hard, gruelling hauling service.

2. Famous *patented* FJ worm gearing, pioneered by Timken-Detroit. "Through Drive" type . . . direct transmittal of engine torque through forward driving axle to rear driving axle. Permanently silent . . . simple, sturdy . . . stands extreme shock-loads without damage. Large diameter worm and worm wheel . . . increased capacity roller bearings . . . easy lubrication . . . light weight make FJ highly desirable for high speed service on any kind of grades.

Plants at: Detroit, Michigan
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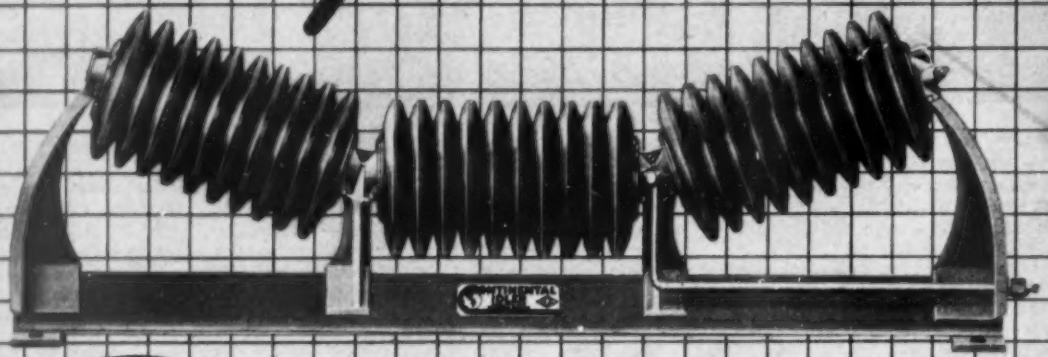
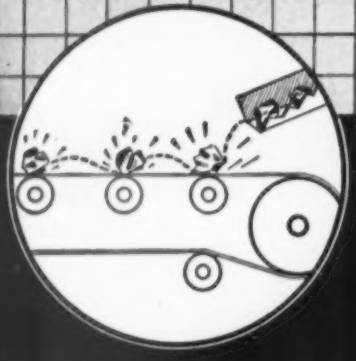
Save your Belts!



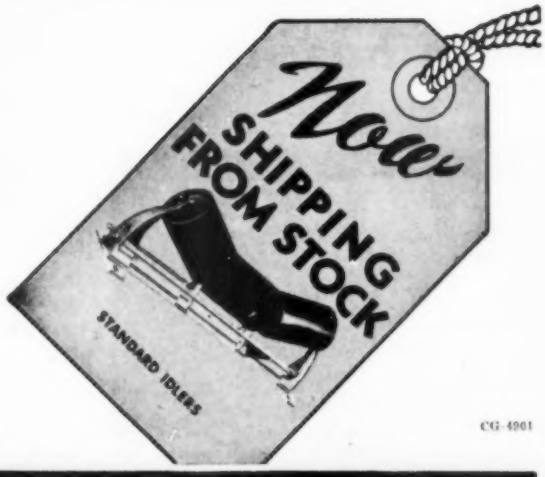


Use CONTINENTAL IMPACT IDLERS

Continental Impact Idlers under the loading point of your Conveyors will reduce damage to the belt covering and prevent breakdown of the carcass, thus lowering your belt cost per ton of material handled.

The design of Continental's Rubber Disc Impact Idlers has been proved superior by laboratory tests. The discs are mounted on a steel roll equipped with Timken Bearings and having the same sturdy construction as Continental's Standard Idlers so far as bearings, shaft size and grease seals are concerned.

Send us your orders and inquiries. Literature available on request.



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CONTINENTAL GIN COMPANY
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One Point Service

The above gears, wheels, and sheaves complete with bushings, bearings, keyways, and finish machining were part of a single shipment to a user of highest quality carbon and alloy steel castings.

ONE SOURCE FOR EVERY ALLOY AND CARBON STEEL CASTING NEED

FARRELL-CHEEK HIGH-PERFORMANCE CASTINGS OFFER YOU SAVINGS IN COST, MAINTENANCE, AND "DOWN TIME."

Finest Name in Cast Steel!

FARRELL-CHEEK STEEL CO.

HIGHEST QUALITY ELECTRIC FURNACE CARBON AND ALLOY STEEL CASTINGS

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ELEVATOR, CONVEYOR PARTS
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GEARS AND PINIONS
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CRANE WHEELS
Overhead, Gantry, Monorail, Ingot Car, Charging Machine.

STOKER PARTS
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Complete Line Wire Rope Fittings and Cutters, Bar Benders and Cutters.

YOUR INQUIRY WILL PROMPTLY BRING DETAILED INFORMATION PERTAINING TO ANY OF THE ABOVE FARRELL-CHEEK PRODUCTS

SANDUSKY, OHIO

from 1/2 to 100 hp

I-R AIR-COOLED COMPRESSORS

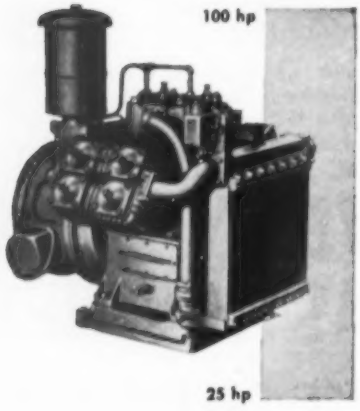
give you these important advantages

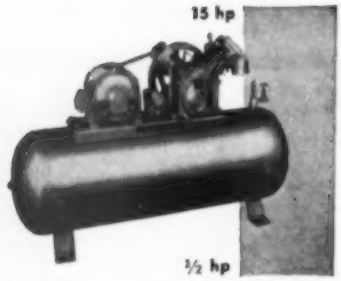
This 50-horsepower V-belt driven Type 40 compressor supplies air in an abrasive-manufacturing plant.

- **SMALL FLOOR SPACE**
- **NO SPECIAL FOUNDATION**
- **EASY MOVABILITY**
- **NO COOLING WATER REQUIRED**
- **NO WATER PIPING**
- **NO DANGER OF FREEZING**

Wherever compactness and light weight, low installation and operating costs, dependable service, and minimum attendance are important factors, Ingersoll-Rand air-cooled compressors fill all the requirements.

Their wide acceptance by all types of industry—from mines to power plants—from drug manufacturers to cargo ships—proves their versatility and dependability. For main air supply, for supplementing the capacity of larger compressors or for de-centralized air systems, Type 30 and Type 40 compressors are ideal. Your nearest I-R representative will be happy to apply his knowledge and experience to your particular problem.





790-1

Type 40 Compressors are two-stage, air-cooled . . . sizes from 25 to 100 hp. Discharge pressures from 80 to 125 psi, also up to 200 psi. . . . Three types of drive: "Motor-compressor," with built-in electric motor; flexible coupled; or V-belt driven. Durable, efficient Channel Valves, Timken tapered-roller main bearings and Constant-level lubrication are additional features. Dual-Control permits selection of constant speed or automatic-start-and-stop control.

Type 30 Compressors come in sizes from ½ to 15 hp . . . handle smaller volumes of air at pressures from 5 to 3500 psi. Available as complete receiver mounted units, with base-plate mountings, or as bare compressor units. Can be equipped with automatic-start-and-stop control, constant-speed control, or dual-control to permit selection of either type. For special service such as instrument control or agitation, certain sizes are available with non-lubricated cylinders.

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

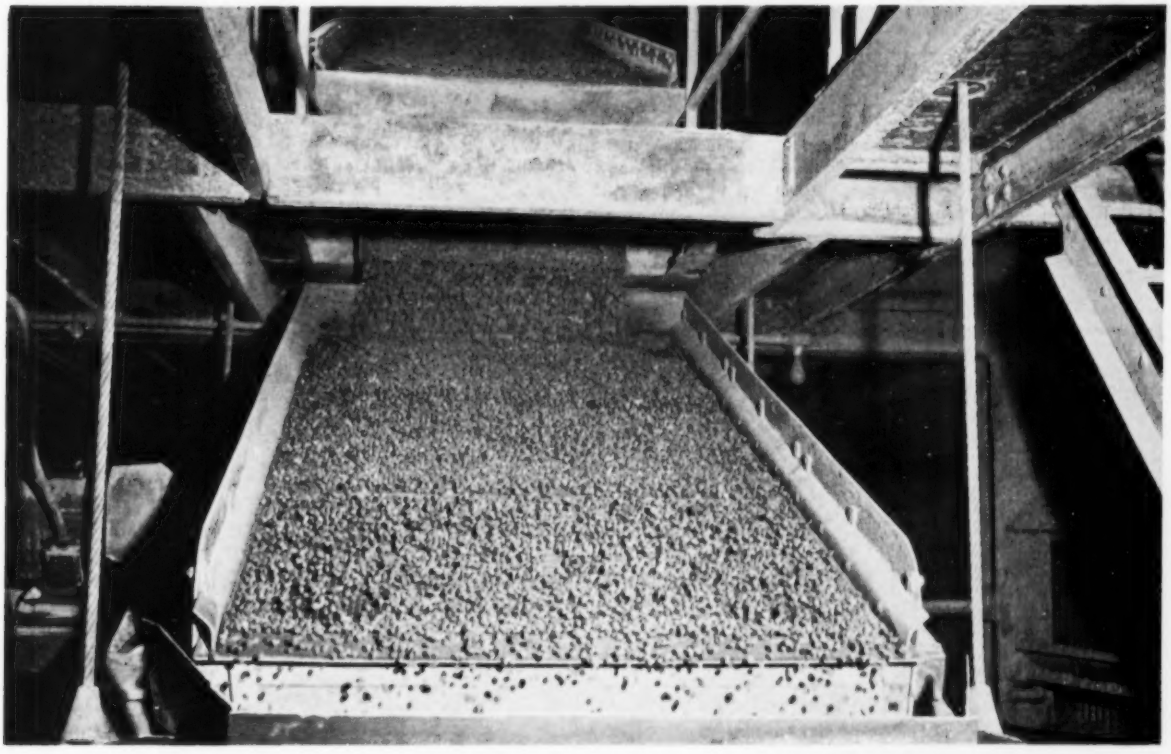
PUMPS • CONDENSERS • AIR AND ELECTRIC TOOLS • ROCK DRILLS

SECO-IZING= BETTER SIZING

at the new modern light slag plant of

LORAIN SLAG CO.

Lorain, Ohio



Progressive Operator Has Four SECO Workhorse Screens on the Job

Here's another on-the-job performance story that dramatically points out the dependability of SECO Vibrating Screens. Pictured above are a 5x14 SECO (rear above) and a 5x12 (front) SECO taking the load smoothly and effortlessly in the modern, efficient plant of Lorain Slag Co. With these two screens and another 5x12 sizing screen and a 4x8' scalper they have a winning team in getting production out, accurately sized and on schedule with a minimum of maintenance. Finished sizes include plus and minus 3/8" and 3/16".

How about your screening problems? Why not get the advantages of SECO engineering exclusives for accurate, high production results on your job? You name the material, from Ag-Lime to Rip-Rap, and we'll recommend the right SECO vibrating screen for the job. Get the whole SECO story, today! No obligation. Write, wire, phone.

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

IS SECO CATALOG #203 IN YOUR REFERENCE FILE?

You'll want a copy of this helpful catalog for ready reference.

Please request on your Company letterhead.

SCREEN EQUIPMENT CO., INC.

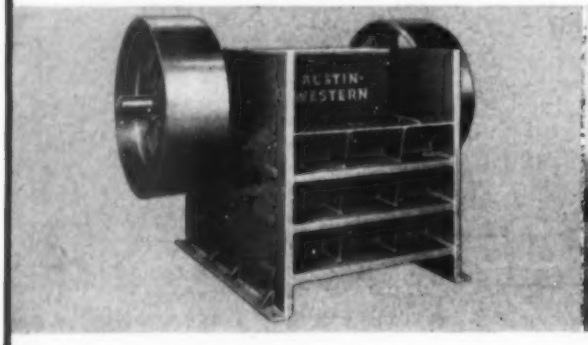
BUFFALO 25, N. Y.

Devoted to the Manufacture of Vibrating Screens Exclusively

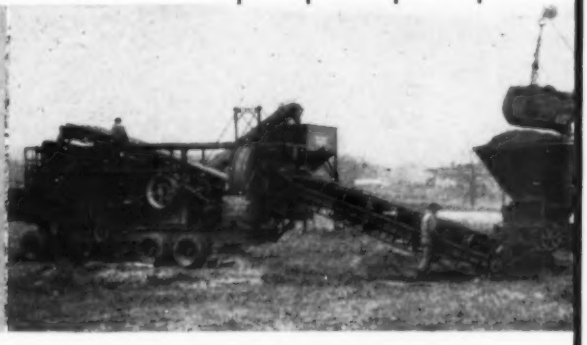
Compare jaw crushers...the guts of every plant... and you'll pick **AUSTIN-WESTERN!**

STUDY THIS FACTUAL COMPARISON OF JAW CRUSHERS BEFORE YOU BUY ANY PLANT

COMPARE...	A-W	Make "X"	Make "Y"	Make "Z"
Oversize shafts of Chrome Vanadium steel, the toughest and strongest material available.	Yes	No	No	No
Bearings located so center line of bearing proper comes within side plate. Thus side plate bears thrust of crushing load.	Yes	No	Yes	No
Machined steel toggle plate for absolute protection instead of cast iron.	Yes	No	No	No
All bearings of anti-friction self-aligning type.	Yes	Yes	Yes	No
All jaws and cheek plates made of manganese steel for maximum life.	Yes	Yes	No	Yes
Steel plate crusher frame for high strength without weight of cast steel frame.	Yes	No	Yes	No
Total	100%	33⅓%	50%	16⅔%



Austin-Western 1036
Roller Bearing Jaw Crusher



Austin-Western "101" Portable Crushing and Screening Plant with 1036 jaw crusher

The jaw crusher certainly is the *guts* of any crushing plant because it is the one unit that has to take constantly rough treatment. Also trouble-free operation of the jaw crusher is vital for profitable production. That's why it is so important for you to *compare* jaw crushers carefully before choosing from any crushing plants.

When you do, we are confident that factual evidence (see chart), will convince you that you will get better performance and longer life with an Austin-Western plant.

● *For more facts on any of the above points or copies of our new booklets, please write: Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio, or your nearby Austin-Western distributor.*

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

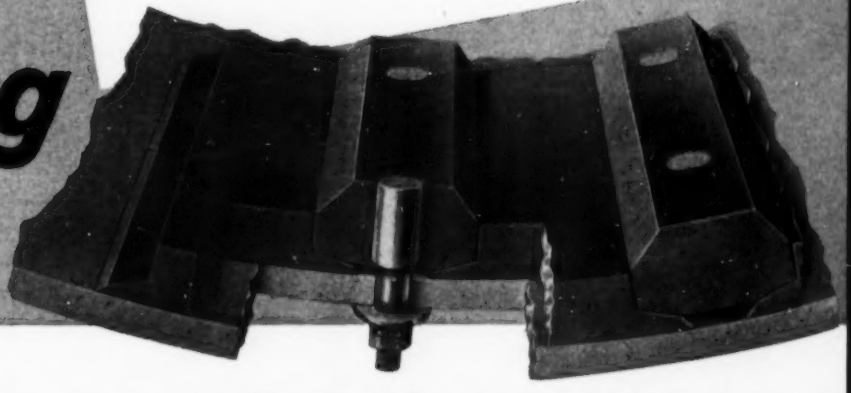
Austin-Western
CRUSHING, SCREENING and WASHING EQUIPMENT

BALDWIN BLH LIMA-HAMILTON
Construction Equipment Division

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

Cut grinding costs

- U·S·S Lorain Rolled Plate Linings are in easy-to-handle sections, accurate sizes to permit quicker installation.
- Lift bars are designed for correct cascade action . . . height of lift varies according to conditions.
- Plates can be heat-treated to compensate for wear.
- Correct sizes make tighter joints—eliminate shell wash.
- Bolt supports located near the bottom of the bar . . . last for life of the lining.



with U·S·S Lorain Rolled Plate Linings

You can do more and better grinding, for less money, with U·S·S Lorain Rolled Plate Linings. The output of your mill increases when the usable diameter increases, and this is just what happens when rugged Lorain *rolled steel* plates are used instead of ordinary castings. Lorain Liners can be much thinner due to their superior strength. Their lighter weight simplifies handling.

You save money with U·S·S Lorain Rolled Plate Linings because they are readily installed and require less maintenance. The plates are accurately made and are in easy-to-handle sections for ready use. Severe localized wear at feed or discharge end of the mill can be balanced by heat-treating.

Lorain Liners are so durable that they remain serviceable until they're almost paper thin. You benefit from the use of the entire plate . . . there is less waste, longer wear. Mill downtime will be reduced and so will your upkeep costs.

The accurate size of U·S·S Lorain Rolled Plate Linings assures tight fit between the ends of the plates and between plates and lift bars, eliminating shell wash.

U·S·S Lorain Rolled Plate Linings are available—in the diameter, length and thickness best suited to your operating conditions—through leading mill manufacturers whose names will be furnished upon request.

U·S·S GRINDING BALLS are carefully made of special composition steel to take long, rough wear evenly. Samples from each production lot are thoroughly tested to make sure of surface hardness and maximum hardness penetration. They come in eleven sizes from $\frac{3}{4}$" to 5". For further information just return the coupon below.

United States Steel Corporation
Room 4240, 525 William Penn Place
Pittsburgh 30, Pa.

Without obligation on my part, please send me your FREE booklet on U·S·S Grinding Balls.

Name .....

Company .....

Address .....

City ..... State .....

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S LORAIN ROLLED PLATE LININGS AND U·S·S GRINDING BALLS

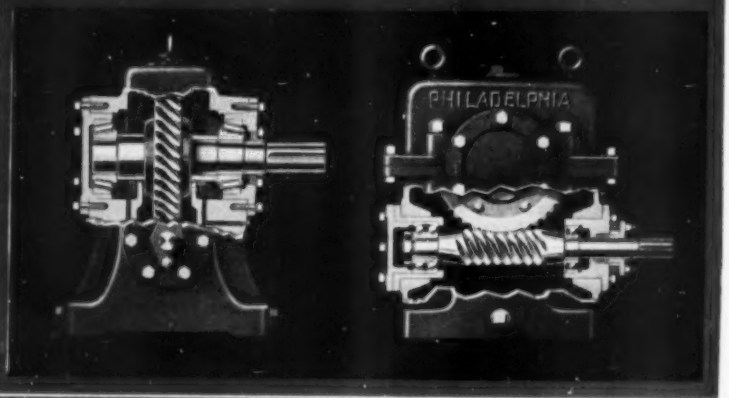
USS

4-283

UNITED STATES STEEL

PRECISION-BUILT

RUGGED
STURDY
EFFICIENT
LOW UPKEEP
LONG LIFE



Why do we say Precision-Built?

Because . . . just as much research, design and engineering have gone into the making of these Heavy Duty Worm Gear Reducers as that of the finest time piece.

Material and manufacturing standards are very rigidly maintained in producing Philadelphia Worm Gear Reducers with the result that long and efficient life is effectively built into these units.

Worms are of alloy steel with carburized hardened and tempered threads, both shaft and threads are smoothly ground and polished after heat-treating.

Worm Gears are made from the highest quality chilled-cast nickel bronze.

Bearings are anti-friction types (ball or roller) insuring smooth, quiet, long-lived performance.

Housings are oil-tight quality grey iron . . . designed to assure maximum *rigidity* and heat radiation, with ample oil reservoir.

Units are available with Worms above or *below* the Worm Gear; also with shafts up or down for Vertical Drives.

A complete range of sizes are available to cover any application up to 265 H.P., with ratios from 3⅝:1, to 6300:1. They are built to provide *efficient* and *dependable* power transmission under the most *rigorous* conditions over a long period of time, at very *low maintenance cost*.

For further detailed information write for latest catalog WG-51.

Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.

NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.

Industrial Gears and Speed Reducers
LimiTorque Valve Controls

Photograph by Howard Lucas

For Moving Mountains...or Digging Coal...

Standardize on AMERICAN Explosives and Accessories

Wherever the stroke of the detonator sets the earth shaking, American blasting materials help speed the work.

Experienced shooters everywhere rely on American explosives because they know they're dependable—that they're produced by modern methods and under strict laboratory control to give the results that shooters want. Available in a wide range of densities, velocities and strengths, American explosives are designed to do your job best—because constant field research tells us what you need. Capable field engineers are available at your call.

HIGH EXPLOSIVES • PERMISSIBLES • BLASTING POWDER • BLASTING ACCESSORIES

AMERICAN Cyanamid COMPANY

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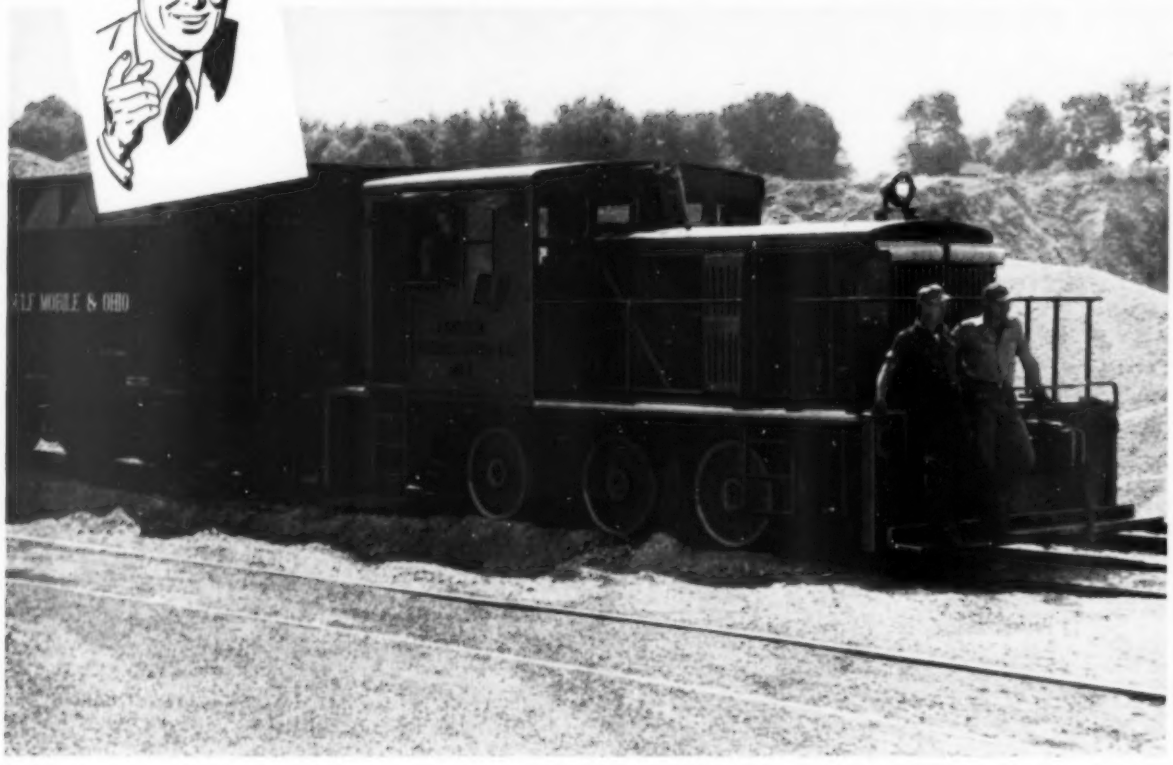
Sales Offices: Pittsburgh, Pa., Bluefield, W. Va., Scranton, Pa., Chicago, Ill., Pottsville, Pa., Maynard, Mass.

This PLYMOUTH...



SAVES $35.00 A WEEK ON FUEL COSTS... REDUCES MAINTENANCE COST 50%!

Imagine! Fuel costs reduced from $10 a day to $3.00 a day! Repair and upkeep costs slashed in half!

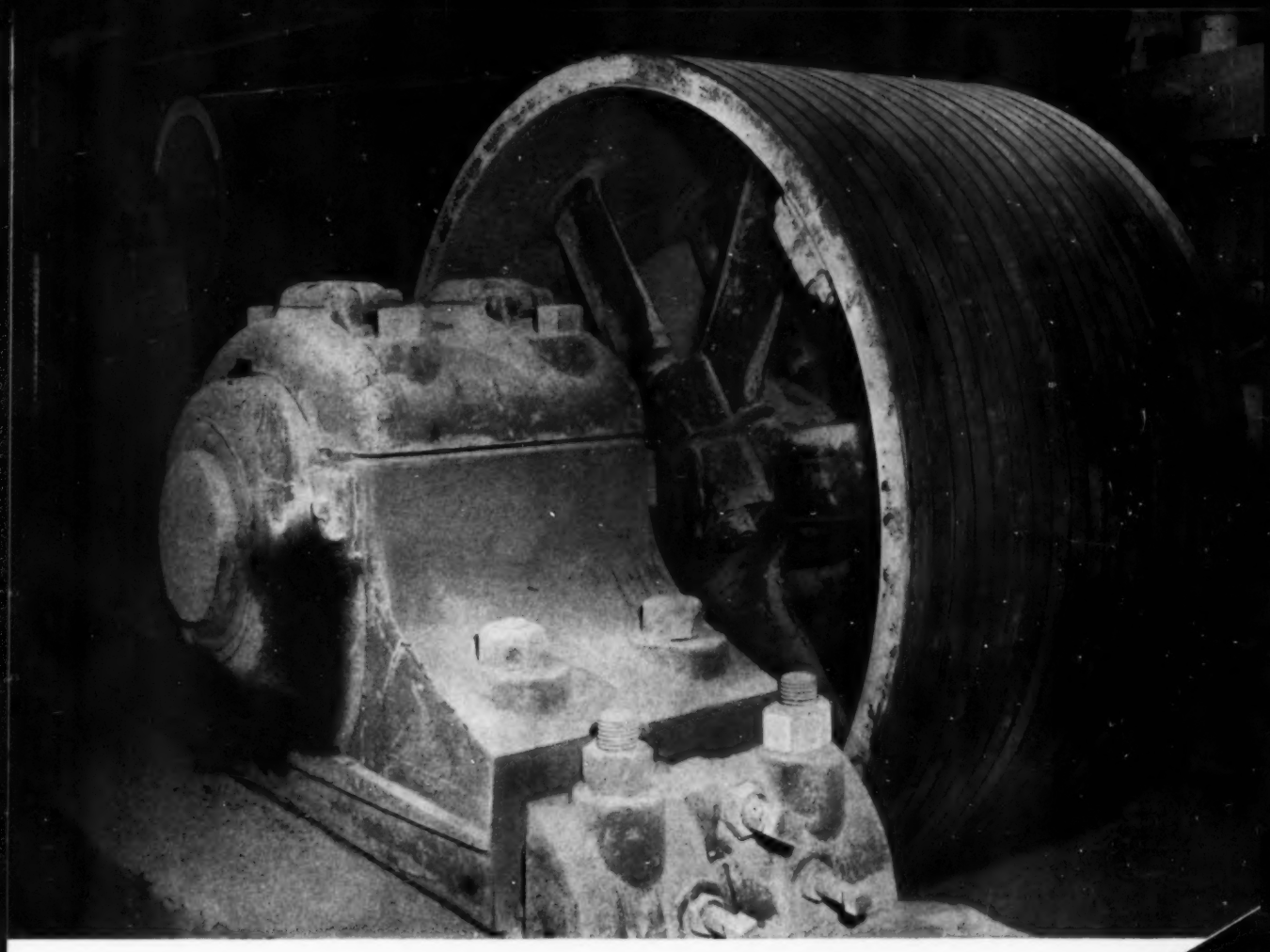
This 30-ton Plymouth Diesel was acquired by the Lincoln Crushed Stone Company, Joliet, Ill., to haul and spot cars of crushed stone. It replaces a locomotive that used over 3 times as much fuel, and required $1,000 a year for upkeep.

Pushing and pulling, this powerful Plymouth operates 286 hours a month, yet requires only 16 hours for routine maintenance. Torqomotive Drive provides smooth, steady power and reduces operator fatigue.

Savings like these, and better, are not unusual to Plymouth owners. These benefits can easily be yours. Choose your Plymouth from a complete line that includes 3 to 70 ton sizes, Gasoline, Diesel or Diesel-Electric power, standard and narrow gauge track models.

Write for catalog. Plymouth Locomotive Works, Division of the Fate-Root-Heath Company, Dept. A-15, Plymouth, Ohio.

PLYMOUTH
TORQOMOTIVE
LOCOMOTIVES



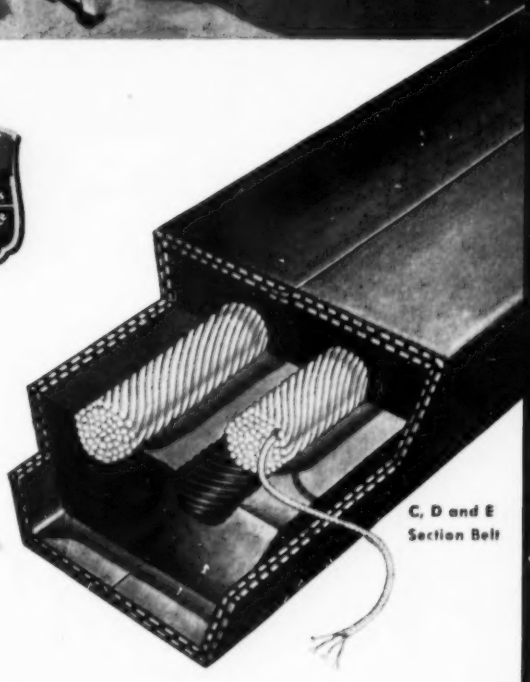
Thermoid Multi-V Belts cut operating costs in quarries

Thermoid
Industrial
Rubber Products
Quality
Service

There's a Thermoid V-Belt for every pit or quarry application. Each belt is *pre-stretched* to provide longer service and *maximum power transmission* without slippage.

Thermoid C, D and E section belts are of rayon grommet-type construction to provide brute strength and extra flexibility that withstands repeated shock loads. The entire belt is vulcanized into a solid unit that withstands moisture, abrasion, internal friction and heat.

Get longer wear with less maintenance . . . lower your operating costs with Thermoid Multi-V Belts. Your Thermoid Distributor can give you complete information on the Belts best suited for your requirements. Or if you prefer, write direct for Catalog 3787.



C, D and E Section Belt

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

Pack YOUR Rock Products in Chase MULTIWALL BAGS

Looking for a bag that's tamper-proof? Spill-proof? You're looking for Chase Multiwall bags . . . the bag you can fill and forget. Available from 2 to 6 plies—Sewn valve, Sewn open mouth, Pasted valve, Pasted open mouth.

SINCE 1847

CHASE BAG COMPANY

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30 BRANCHES AND SALES OFFICES—STRATEGICALLY LOCATED

IT COSTS YOU NOTHING, YET IT'S APPARENT IN EVERY CHASE MULTIWALL BAG . . . 107 YEARS EXPERIENCE

35 YEARS AGO AUTOCAR SWITCHED OVER TO NUT & BOLT CONSTRUCTION

During a transcontinental test run way back in 1920, a spring bracket broke and had to be removed, brazed and remounted. Due to its location, it took a whole day to chisel through the rivets that held the bracket. Right then and there Autocar switched over to nuts and bolts. It was plain that rivets were not right for a quality product like Autocar. And besides, bolts permit the use of higher strength material than rivets. They're heat treated and fit the holes exactly. They're installed with heat-treated tension lock washers under both bolt head and nut for a permanent, tight fit. They make maintenance quick and easy because any part, even the frame rail, can be removed and replaced without special tools.

When you buy an Autocar, you get a sturdy, quality-built truck or tractor that stays in tip-top operating condition for years and years of dependabie service. Fill in the coupon for more information.

AUTOCAR TRUCKS

Autocar Division of The White Motor Company
Ardmore, Pa.

Export: Drexel Building, Philadelphia 6, Pa., U.S.A.
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AUTOCAR DIVISION OF THE WHITE MOTOR COMPANY
Ardmore, Pa.

How can Autocars improve my hauling operation?

Name_____

Firm Name_____

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Type of operation_____

No. of trucks in fleet_____

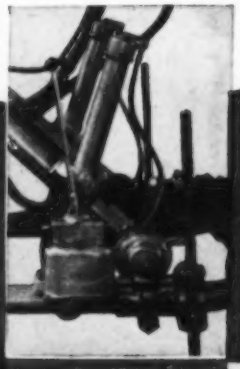
24C

NEW URM WAGON DRILL WITH HYDRAULIC LIFT

does these things...

Spots holes faster than ever before.
Raises or lowers the drilling mast in jig time—
with hydraulic cylinders.
Straddles bigger stumps and rocks because of high clearance.
Mounts heavy-duty 4" drill, with single drill control lever.
Blows at full pressure, with air operated
exhaust control valve.

another quality product of GARDNER-DENVER engineering...

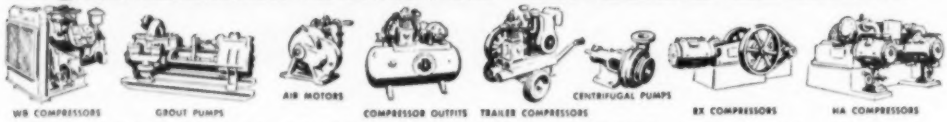


The new URM Wagon with hydraulic lift is rugged and simple —special feature incorporates hydraulic cylinders on both sides of wagon frame to lift U-bar.

For compressed air power that's fully reliable in any weather —at any altitude—choose the Gardner-Denver 600.

SINCE 1859

GARDNER-DENVER



WB COMPRESSORS · GROUT PUMPS · AIR MOTORS · COMPRESSOR OUTFITS · TRAILER COMPRESSORS · CENTRIFUGAL PUMPS · RX COMPRESSORS · HA COMPRESSORS

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS
FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada) Ltd., 14 Curity Avenue, Toronto 13, Ontario

"This Boy Scout stuff pays off!"

"I use the *square* knot to tie two pieces of Plain Primacord together when I want to lengthen the trunk line aboveground. It can be drawn up tight and won't slip back. But I never use *any* knot in a hole. It might hang-up the explosives when loading, and you don't want that to happen.

"A 500-ft. reel of *Plain* Primacord weighs only 9 pounds – it's easy to lay it out fast. You can use it in small or shallow holes, too.

"But when we go down deeper I want *Reinforced* Primacord. It has a tough cover, and greater tensile strength.

"When I'm handling those heavily reinforced explosives containers, or when I'm working in deep, ragged holes, I go for *Wire Countered* Primacord.

"And for river crossings – or where a field shot must stand a long time before blasting – I use *Plastic Reinforced* Primacord.

"If you want good results every time, use the *right* Primacord – and use it *right!*"

P-12

See your explosives supplier or write for information to

THE ENSIGN-BICKFORD COMPANY

Simsbury, Connecticut

Also Safety Fuse since 1836

PRIMACORD® *detonating fuse*

PROVED and APPROVED

IT'S YOURS IN THE Cedarapids Built by IOWA

SUPER TANDEM

ASK Super Tandem owners about Super Tandem performance! One contractor produced 3/4" minus material at a rate of 228 to 310 tons per hour with average percent of crush 20%. On this job, maintenance costs on the Super Tandem were less than three-fourths of a cent per yard! Figure out what this kind of low-cost production will mean on *your* jobs!

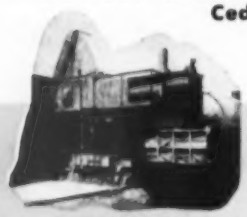
The Cedarapids Super Tandem is newly engineered for the extra high screening capacity that gives you a big advantage in any pit and is especially profitable where there is a high percent of fines or contaminated material.

Look over the features listed at the right, then ask your Cedarapids distributor to show you how you can apply them to your work for higher profits.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

CHECK THESE FEATURES

- √ Big 48" x 12' 2½ Deck Horizontal Vibrating Screen assures really high screening capacity, particularly desirable where gradation of a big volume of material is necessary.
- √ 2416 Roll Crusher and 1036 Jaw Crusher deliver a steady flow of crushed material.
- √ Flexibility with optional Swivel Feed Conveyor, Spray Bar attachments and Sand Ejector Screw to meet every job condition.
- √ Delivery conveyors, plant conveyor and under-crusher conveyor are 30" wide to handle the increased screening capacity of the plant.
- √ Quality construction of every unit cuts maintenance costs to the minimum, keeps plants operating all day every day to maintain your high production averages.


Master Bituminous Mixing Plant

Vibratory Soil Compactor

Motorized Head Pulley

Model G-60 6000-lb. Bituminous Mixing Plant

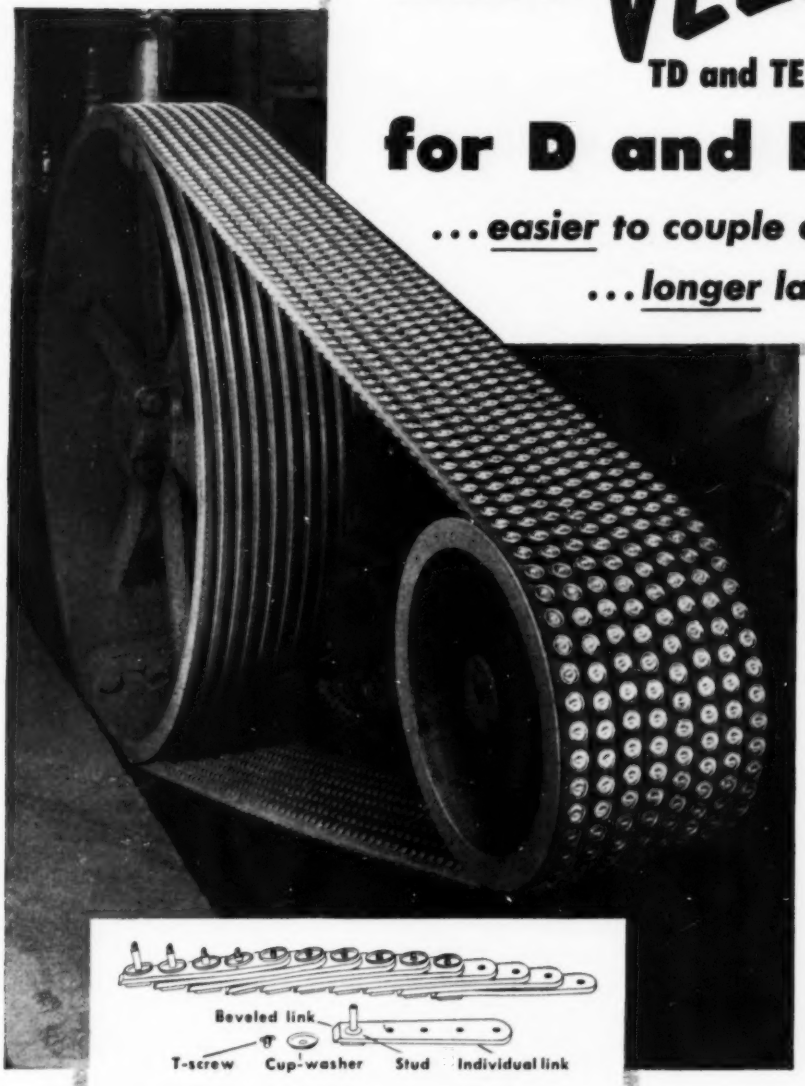
NEW VEELOS

TD and TE Adjustable V-belts

for D and E Drives

...easier to couple and uncouple

...longer lasting



This detailed line drawing of the new Veelos TD and TE v-belt makes it easy to see how this new v-belt is designed to do a better job... easier!

Now get the v-belt that's been especially developed for D and E drives—the new, patented Veelos TD and TE adjustable v-belt!

This new Veelos has advantages unmatched by any other v-belt. It is *installed quickly* without removing the outboard bearings found on most D and E drives. It is the easiest v-belt to couple and uncouple ever developed. Cup-washers and T-screws join links together to form individual belts of any length. Veelos TD and TE *lasts longer* because new high-tensile strength links plus the new stud, cup-washer and T-screw design give *added strength* —combines this added strength with *maximum flexibility* for cooler, smoother running.

Install this new Veelos TD and TE v-belt on your D and E drives. Prove to yourself why there's no v-belt that can match the performance, the efficiency and the economy of Veelos TD and TE.

Get the complete story of this great new v-belt for D and E drives. Send the coupon now for new 8-page illustrated catalog.

VEELOS
THE LINK
V-BELT

Veelos is known as Veelink outside the United States.

T1

MANHEIM MANUFACTURING & BELTING CO.
654 Manbel St., Manheim, Pa.

Please send copy of your new Veelos TD and TE v-belt catalog.

Name.....

Company.....

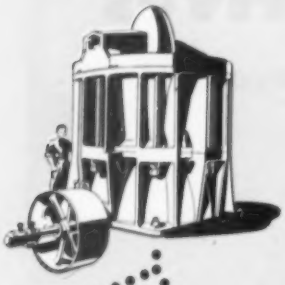
Address.....

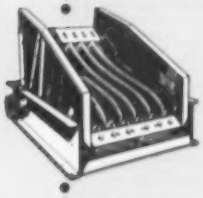
.....

ADJUSTABLE TO ANY LENGTH • ADAPTABLE TO ANY DRIVE

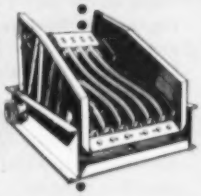
Portugal's CABRIL DAM and POWER STATION
another major project using NORDBERG equipment throughout

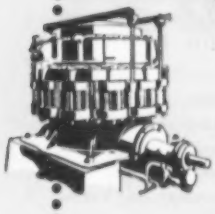
30" Nordberg-Symons Primary Gyratory Crusher



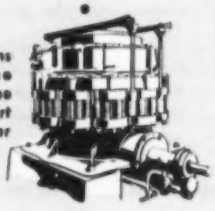


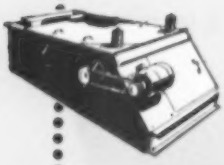
Two 42" x 5' Symons Vibrating Bar Grizzlies

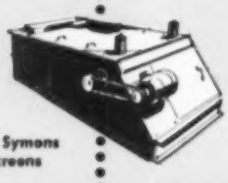




One 4¼' Symons Standard Cone Crusher and One 4' Symons Short Head Cone Crusher







Two 3' x 8' Symons Rod Deck Screens

Q253

NORDBERG Machinery and "Know-How" again selected for another important project . . . this time by *HIDRO-ELECTRICA do ZEZERE,* of Lisbon, for the construction of the new Cabril Dam and Power Station, in Portugal.

Major equipment supplied by Nordberg for this installation includes a 48" Apron Feeder; a 30" Symons® Primary Gyratory Crusher; a 4¼' Symons Standard Cone Crusher; a 4' Symons Short Head Cone Crusher; two Symons Vibrating Bar Grizzlies; and two Symons Vibrating Rod Deck Screens.

The outstanding success of this modern Nordberg equipment has been amply proved by the many statements of complete satisfaction written by the engineers and supervisory personnel connected with the Cabril Dam project.

Here, then, is further evidence that for large or small operations—including mineral reduction, base or precious metals, public works projects, or commercial aggregate production—you can depend on NORDBERG EQUIPMENT to deliver maximum output at lowest possible cost.

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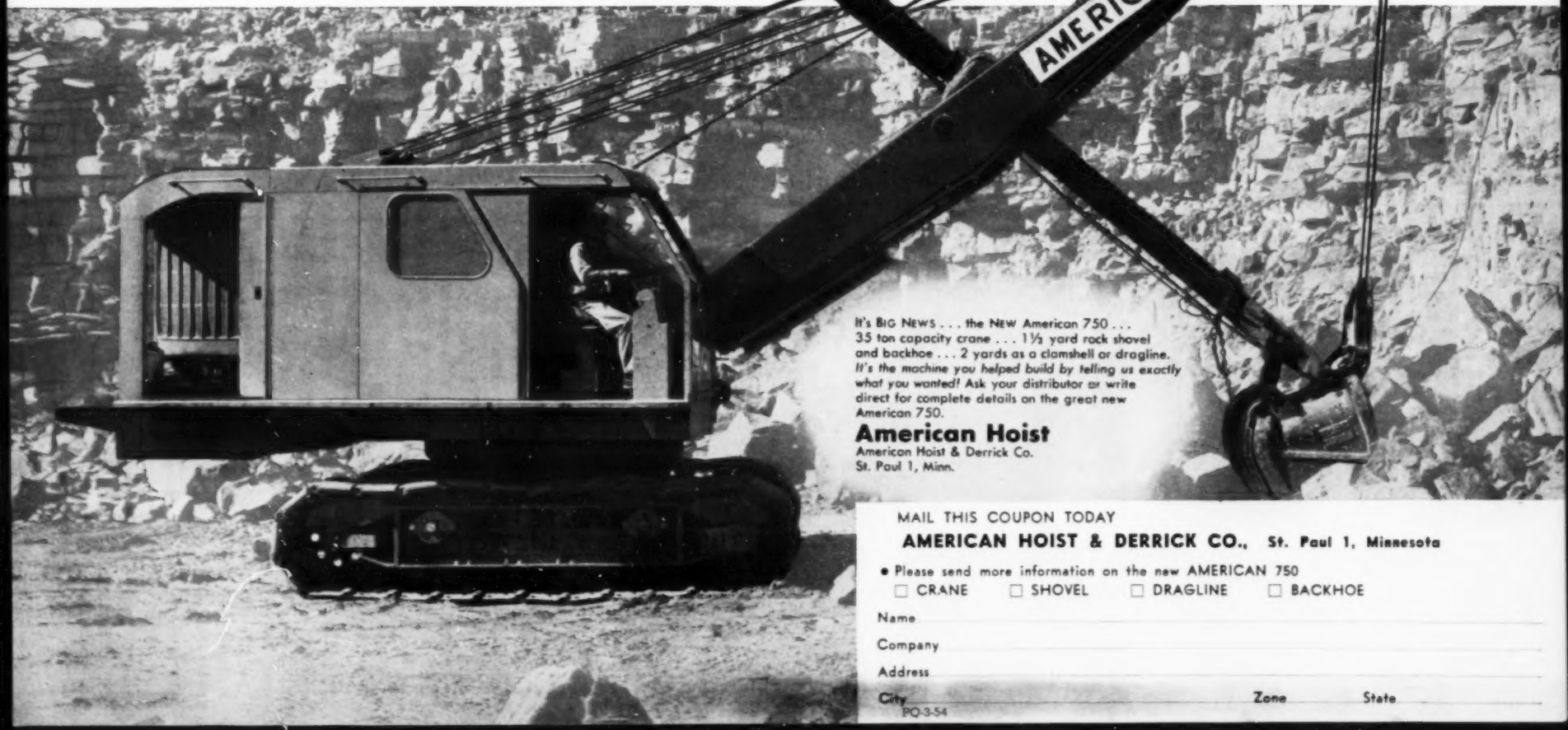
Here's the NEW American 750



It's BIG NEWS . . . the NEW American 750 . . . 35 ton capacity crane . . . 1½ yard rock shovel and backhoe . . . 2 yards as a clamshell or dragline. *It's the machine you helped build by telling us exactly what you wanted!* Ask your distributor or write direct for complete details on the great new American 750.

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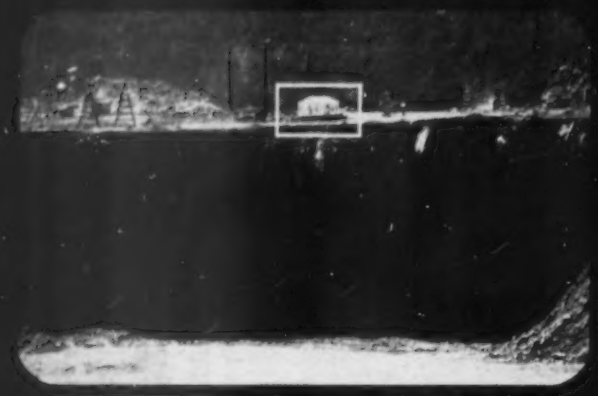
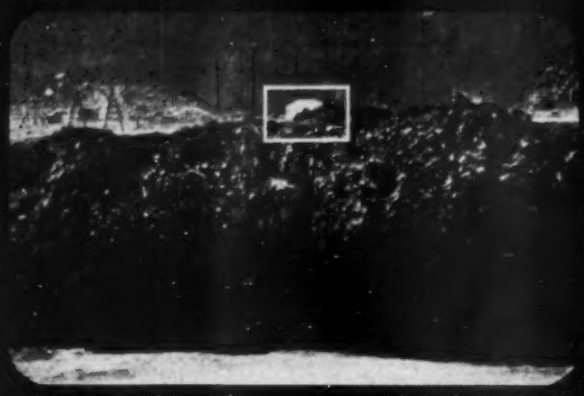
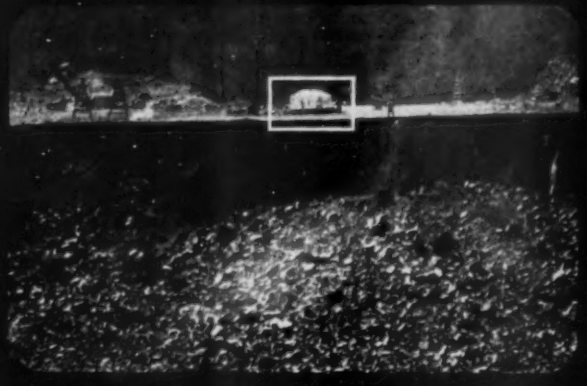
"Less shake...

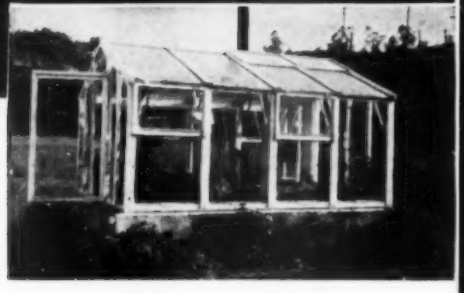




Less noise...



No broken glass..."



WITH the help of the ROCKMASTER® blasting system and a greenhouse, the North Jersey Quarry Co., Millington, N. J., has built good community relations. They proved to nearby neighbors that their blasting produces less vibration in a dwelling than that of a slammed door.

The greenhouse is only 48 feet from the quarry face. Yet after the blast there wasn't a single crack in a pane of glass . . . the concrete foundation was in perfect condition. That is convincing evidence for any neighbor worried about his home.

By initiating the blast at the bottom of the holes . . . the point of maximum confinement . . . the ROCKMASTER blasting system keeps the explosive force confined where it does all its work on the rock. There is minimum air blast, no wild flying rock, no wasted explosives power . . . a well broken, easy-to-dig pile is the final result.

For quarrying, mining and construction work, see how ROCKMASTER can increase your blasting efficiency and improve your public relations. Ask your Atlas representative for a copy of the new Atlas Explosives Catalog that is just off the press.

BLAST DATA:

Number of holes	9
Average depth	56′
Spacing	17′
Burden	6 to 20′
ROCKMASTER delays	0 through 8
Average stemming	17′
Diameter of holes	6″
Total powder (Apex #4 HV and #2 MV)	3025 lb.
Rock produced	14,000 Tons
Powder factor	4.63
Loading started	8:30 AM
Loading finished	10:30 AM
Blast fired	11:15 AM

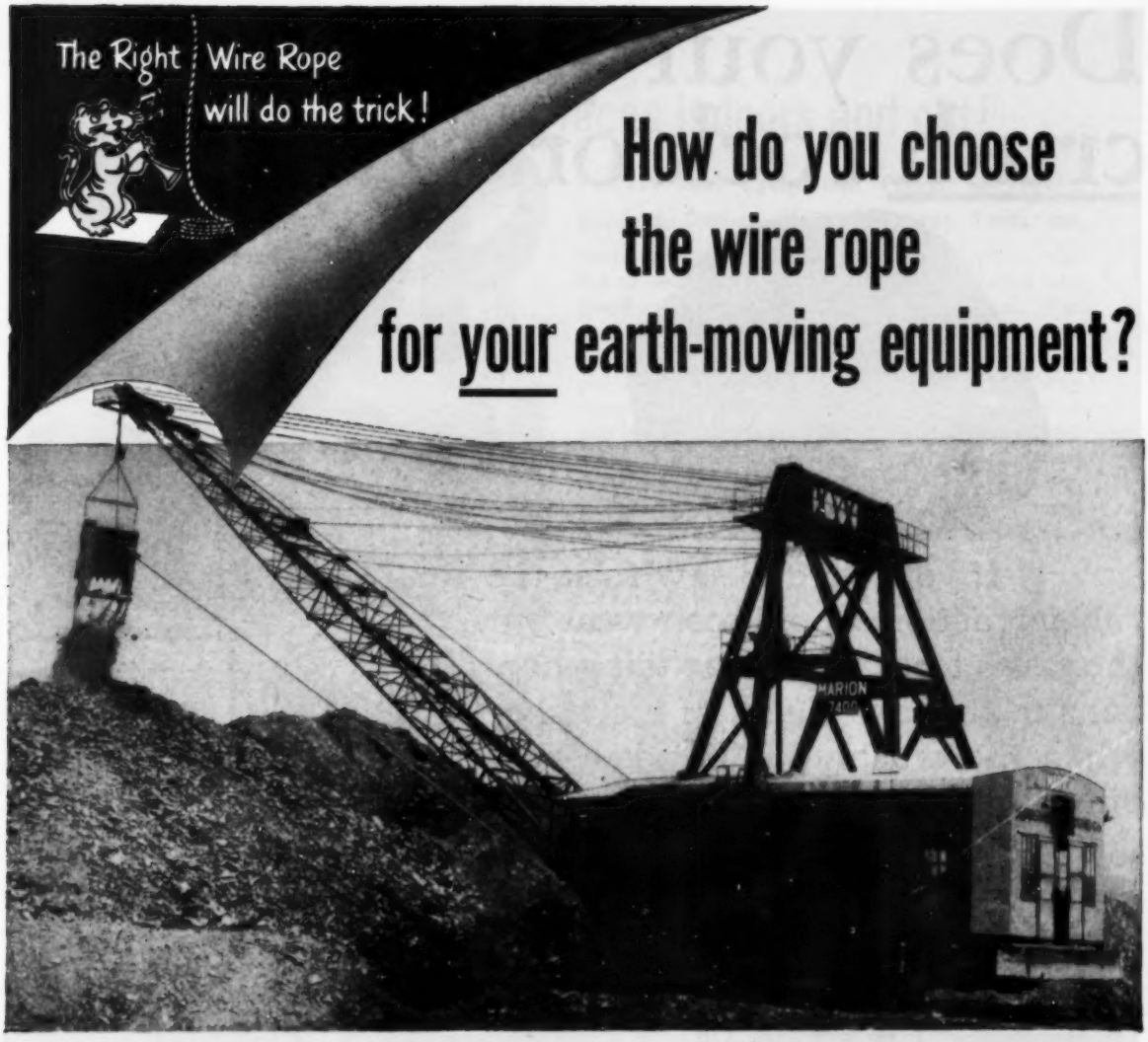
ATLAS

ATLAS EXPLOSIVES

"Everything for Blasting"

ATLAS POWDER COMPANY,
WILMINGTON 99, DELAWARE

Offices in principal cities



EVERY wire rope on your stripping or excavating machinery needs a particular combination of strength, fatigue resistance, and flexibility. Hoist ropes on big power shovels need high tensile strength to absorb impact stresses and must be extremely tough to withstand constant bending over sheaves. On draglines, drag ropes must possess high strength combined with great abrasion resistance. Boom ropes must have strength plus fatigue resistance.

There's an American Tiger Brand Wire Rope that has been especially designed for every grueling rope job that you will encounter. And it pays to spend a little extra time to analyze your rope requirements carefully and determine exactly which Tiger Brand Rope is the best one to use.

Our experienced Wire Rope Engineers will be glad to help you do this. They know what every Tiger Brand Rope can do and what type of rope every job requires. Their assistance assures you of getting the *right* rope for every job; and that saves you money. Remember, the right rope often lasts up to twice as long as the wrong one. Free engineering service is available through our nearest District Sales Office or by writing to American Steel & Wire, Rockefeller Building, Cleveland 13, Ohio.

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Excellay Preformed

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UNITED STATES STEEL

Does your jaw crusher crush rock or "saw" rock?

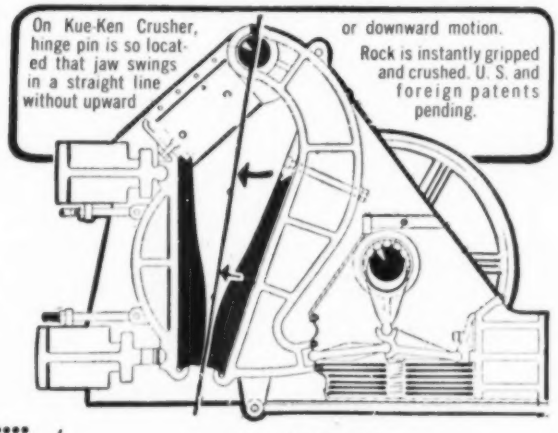
If you were to saw rock, the rubbing action would soon wear out the saw's teeth. The same thing happens to the jaw plates of a crusher when the crushing action is a rubbing action—the jaw plates wear out quickly!

On overhead eccentric type crusher, moving jaw forces rock both up and down causing severe rubbing and wear on jaw plate.

On Blake type crusher, unbalanced action of toggle-driven swing jaw imparts upward motion to rock causing terrific abrasive action on jaw plates.

No jaw crusher actually saws rock but "sawing" is symbolic of the up-and-down, crushing-by-rubbing action of other crushers. Kue-Ken works on the compression-without-rubbing principle . . . there is a direct crushing action. Kue-Ken's jaw plates outwear those of other crushers up to 10 times and more!

On Kue-Ken Crusher, hinge pin is so located that jaw swings in a straight line without upward or downward motion. Rock is instantly gripped and crushed. U. S. and foreign patents pending.



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Protect Your Equipment, Pipes, Conveyors, Crushers, Dusters, Metal Structures, Tanks, etc.

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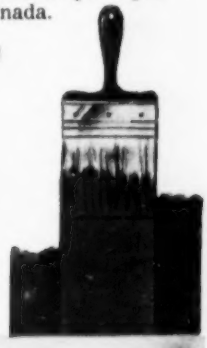
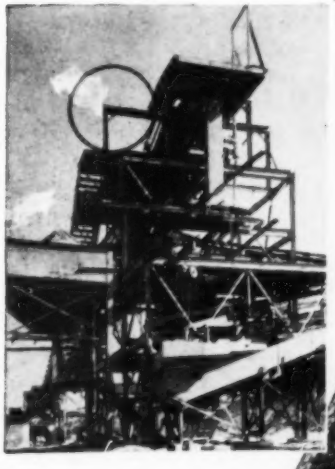


May be applied directly over rusted surfaces

See local classified telephone directory under Rust Preventatives or Paints for nearest source of supply.



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NO REBORING!
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NO MACHINING!

Ready for the shaft, with no costly, time-consuming operations to make them fit. That's the big news about Dodge Taper-Lock Sprockets. Taper-Lock grips the shaft with the firmness of a shrunk-on fit, yet comes off easily. Bushings may be re-used. They come in sizes to meet most every application.

Taper-Lock Sprockets are available from Distributors' stocks in a complete range of B-type steel sprockets—½" to 1¼" pitch. Dodge quality Roller Chain is packaged in 10-foot lengths—also available in 50-foot and 100-foot reels. Save time—save money—keep production rolling—get Dodge Taper-Lock Sprockets and Roller Chain from your Dodge Distributor.

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CALL THE TRANSMISSIONEER, your local Dodge Distributor, for valuable assistance on new, cost-saving methods. Look for his name under "Power Transmission Machinery" in your classified telephone directory, or write us.

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Standardize, economize with Taper-Lock, the bushing that is interchangeable in Dodge sprockets, sheaves, couplings and conveyor pulleys. *More than 2,000,000 in use!*

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LIGHT IN THE NIGHT...

Spearing across the snows
of Canada shines this headlight.
But for refractory brick,
the arc wouldn't spark to flash
the headlight, the stainless
steel with which the car is built
would not exist... the trucks
she rides on, the motors and the
generators, even the glass...
depend for their existence upon
quality refractories
such as Grefco supplies
the world.

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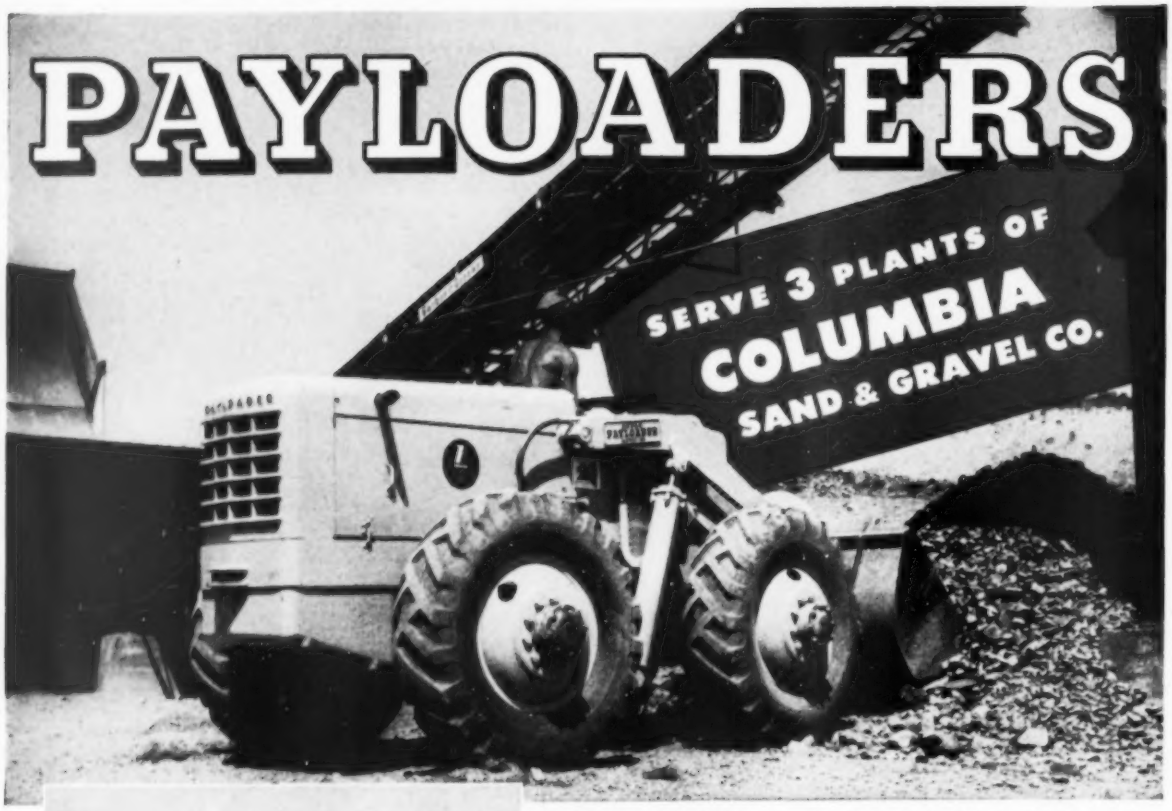
Products of fame... wherever there's flame

PAYLOADERS



HR "PAYLOADERS" at Columbia's Martindale and Philmont plants — two of their three "PAYLOADER"-equipped pits near Hudson, N. Y.

4 Wheel drive "PAYLOADERS" are pets at the three Columbia plants because they do so many jobs *well* and move fast from one task to another. They load trucks . . . trim piles . . . carry and dispose of oversize material . . . pull stuck trucks . . . serve as handy man-lifts for conveyor greasing and repair.

Superintendent William Lansing at Martindale says, "Our Hough 'PAYLOADER' makes the job of keeping our plant clean very easy. It is a dependable machine and economical to operate."

The operator says, "I like the smooth riding and the easy steering and good visibility."

The 1 cu. yd. Model HR is one of several sizes of "PAYLOADERS" serving cement mills, block plants, sand and gravel plants, crushed-stone and dimension stone quarries, as well as producers of other metallic and non-metallic materials.

There's only one "PAYLOADER", but there are 7 models of these distinctively outstanding tractor-shovels to fit *your* job. Your nearby "PAYLOADER" Distributor is ready to give you complete details. The Frank G. Hough Co., 750 Sunnyside Ave., Libertyville, Illinois.

FREE JOB STUDY

Here's an authorized job analysis of "PAYLOADER" operations in a pit producing a wide variety of sand, gravel classifications. Ask for job Study No. 20.

SAY "HUFF"

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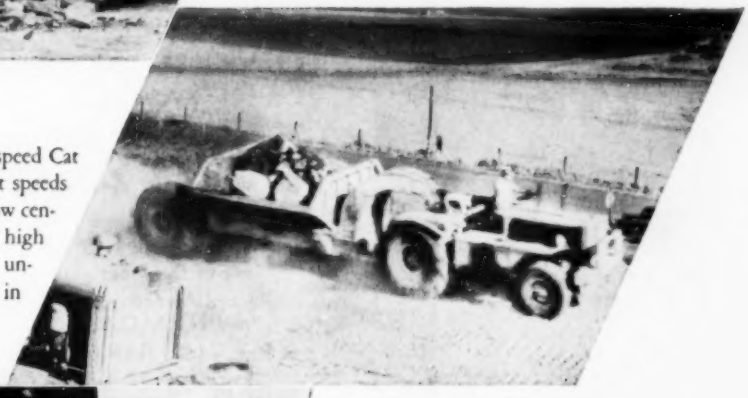
THE FRANK G. HOUGH CO. • Since 1920

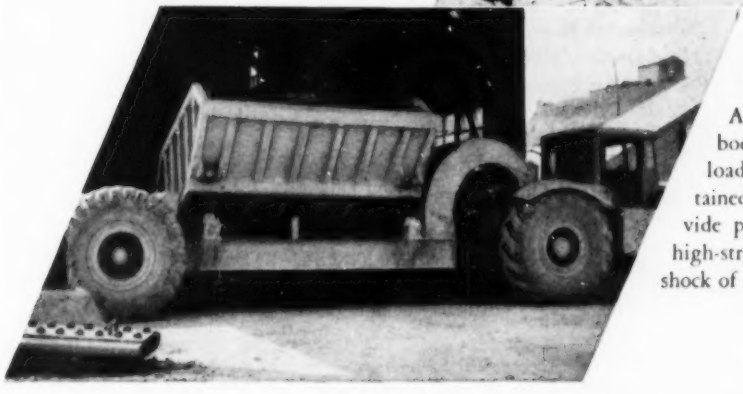
FAST LOADING . . .

The low, wide body of the Athey PD10Q makes an easy target for fast-swinging shovels—so the body can be heaped to a full load in a hurry. The body is constructed of high-quality tensile steel to withstand loading shocks. Big tires give traction for action in any footing.



FAST HAULING . . .

The PD10Q is teamed with the high speed Cat DW10 Tractor to haul full payloads at speeds up to 24.5 MPH. Low height gives a low center of gravity for maximum stability at high speeds, yet there's plenty of clearance underneath. Non-stop turns can be made in a 26′ radius.



FAST DUMPING . . .

A fast-acting three-stage hoist tilts the body to 45° in either direction. ALL the load spills out quickly. Stability is maintained even on new fill. Large air brakes provide positive stopping power. All-welded, high-strength steel frame absorbs twist and shock of loading, hauling and dumping.

Picture shown is of St. Mary's Cement Co. Ltd., operations at St. Mary's, Ontario.

FAST PROFITS

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Athey **PRODUCTS CORPORATION**

5631 West 65th Street
Chicago 38, Illinois

VOL. 46 MARCH 1954 No. 9

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COST LESS because they
LAST LONGER
Hundreds of repeat orders over a period of years, from cement plants covering a broad area, testify to the useful service of B&W Tube Mill Liners.
Long life is the answer. And that of course means lower overall cost.
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BABCOCK & WILCOX
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editorial

Why Permit A Recession?

THE moderate decline in business activity we have been experiencing in the last few months is obviously a normal period of readjustment which must inevitably occasionally interrupt any prolonged business "boom". A study of past business history and the numerous recessions and depressions we have gone through shows that few, if any, of the conditions which caused them now exist. There is no good reason to regard what we are now experiencing as anything but a temporary leveling-off period during which numerous necessary readjustments are being made, preparatory to a continuation of the sound industrial and economic growth of this country.

In spite of the very obvious facts to the contrary, however, there are among us some pessimists who are shouting "recession" or "depression" so loudly that they are raising serious doubts in many quarters as to our actual economic position. Some of this shouting is being done by poorly-informed people with good intentions, and some by those with political or personal axes to grind, or by those wishing to discredit the present administration. It is also quite probable that much of this shouting is being done by enemies of our democratic system who seize on every opportunity to discredit us with the rest of the free world in order to further their own ruthless campaign for world domination.

ACCORDING to Paul G. Hoffman, chairman of the board of the Studebaker Corporation, an internationally famed industrialist, those who talk of an impending recession cannot look to the hard facts of America's economic position to substantiate their pessimistic outlook. In an article entitled *"How to Avoid a Psycho-Recession,* published in a recent issue of *The New York Times Magazine,* Mr. Hoffman said, "There is absolutely nothing wrong with our economy that a higher volume of hard-hitting advertising and sales promotion by business, and 100,000 good creative salesmen could not cure."

The impetus behind the unwarranted recession talks today is largely psychological, according to Mr. Hoffman. The nation is now making a major transition from a seller's to a buyer's market and needs the same kind of nation-wide planning which in 1946 made possible a quick transition from a wartime to a peacetime economy. This transition, he said, must be made "quickly, with a great deal of boldness, some risk, and hard work, so there will not be a long period of doubt and uncertainty during which the fear psychology can take hold."

"The ironic fact," Mr. Hoffman pointed out, "is that we can talk ourselves into a recession, but we cannot talk ourselves out of one."

"What the American people think, say, and do," he concluded, "will largely determine not only our own destiny, but the course the whole world must take."

As is pointed out in the "Washington News Letter" in this issue, Washington also is talking about the state of the economy. The President apparently is not alarmed about the situation, and he makes out a good case for his confidence in our economic future. In his recent Economic Report to Congress, he said that we are going through a readjustment process which includes reduction of inventories and should achieve a better balance between production and sales during the next few months, provided that business, consumer, and government spending continue at their recent high and stable level. Business spending is expected to remain high, but the President is less sure of consumer expenditures. A moderate decline in federal expenditures may be expected, but this should be balanced by state and local spending, particularly for much-needed streets, roads, schools, hospitals, water and sewage facilities, etc. The states, he said, are in excellent financial condition and well able to take up any slack in federal spending.

ON FEBRUARY 17 President Eisenhower further assured the nation that if the unemployment situation does not show improvement in March, when employment normally shows seasonal increase, he will then consider emergency measures, including tax reduction, in order to head off a recession. If necessary, he said, he will not hesitate to use any or all of the many measures the government has in reserve to stabilize the economic situation.

Crawford H. Greenewalt, president of the Du Pont Company, recently characterized as "nonsense" the viewpoint that the economy is reaching an industrial plateau from which progress will be made only as population increases. "It is tantamount to saying that the last scientific barrier has been crossed—that there is no fruitful objective for further research—and that men's appetite for a more abundant life has been fulfilled."

SOME of the best advice we have seen on what is needed to prevent a recession, depression, or adjustment period comes from the advertising manager of a large national manufacturing concern selling to many industries. He says that the fear of a recession can easily set up a chain reaction which could have a very serious effect on business and our general economy. For this reason he feels that business and industry and all media should do whatever they can to counteract this "psychology of defeat". His advice to industry is to go back to good, old-fashioned selling; to get the services and advice of proper advertising and marketing counsel; to advertise in the type of media best suited to its product and services; to dig deeply into old customer and new prospect files; and to get everyone in every department of each company to become sales minded.

Whatever their aims, the "pessimists" among us are creating the very real danger of a recession based on purely psychological reasons rather than on actual facts. In order to counteract such reasoning, every one of us must make apparent in words and in action his confidence in the basic soundness of our economy and in our future. Only in this way can we avert the possibility of a "psycho-recession".

Walter E. Trauffer

SMIDTH

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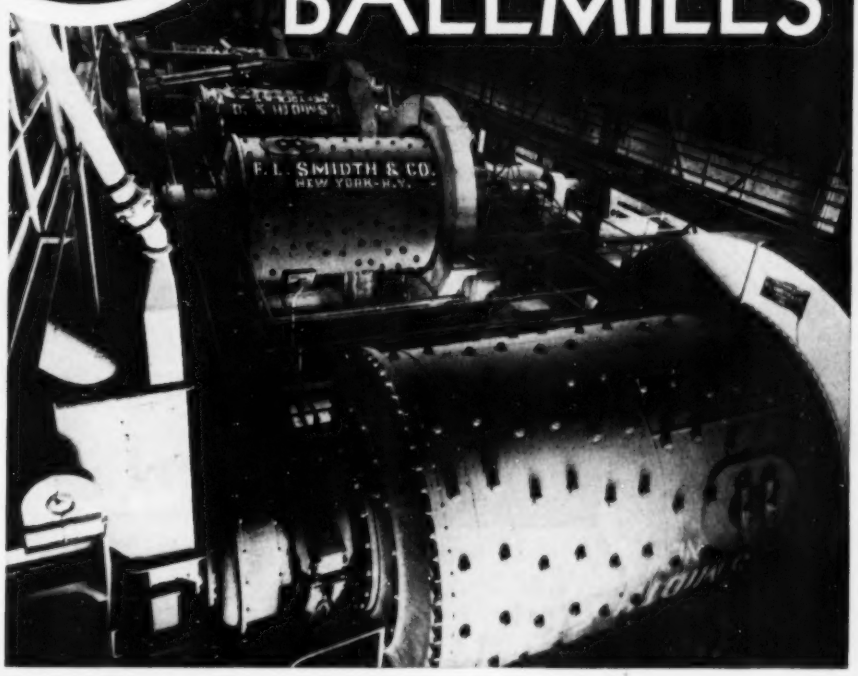

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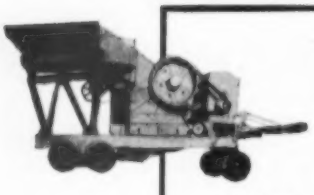

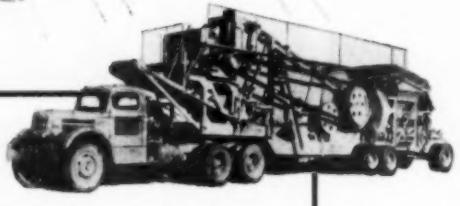

To the scores of satisfied users of Diamond products, and to future Diamond customers, it is a pleasure to announce that the Diamond Iron Works line of crushing, screening, washing, and conveying equipment for rock, gravel, aglime, and corporate aggregates has been acquired by Goodman Manufacturing Company, Chicago.

Goodman, 54 years a leading designer and manufacturer of heavy equipment for underground mining and tunnelling, will contribute advantages inherent in a large organization of sound reputation and technical skill.

Manufacturing, as well as Diamond's sales and engineering departments, have been transferred from Minneapolis to the Goodman plant in Chicago. Now that larger and better facilities are available, Diamond users can expect such benefits as improved service—better-than-ever Diamond products.

Experienced engineering and sales counsel will be maintained by Diamond veterans. An established Diamond distributor—there are more than fifty located throughout the country—will continue to serve you. Your call upon any of our services will be promptly cared for.

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news of the industry

PIT AND QUARRY

H. C. Maginn Announces Resignation from Staff Of Calaveras Cement Co.

H. C. Maginn, former executive vice-president of the Calaveras Cement Company, San Francisco, Calif., recently announced his resignation from this post, to devote his time to the new responsibilities he assumed when he became president of the Blair Holdings Corporation. Mr. Maginn will continue to serve as a member of the Calaveras board of directors. It was announced that the position he vacated will not be filled.

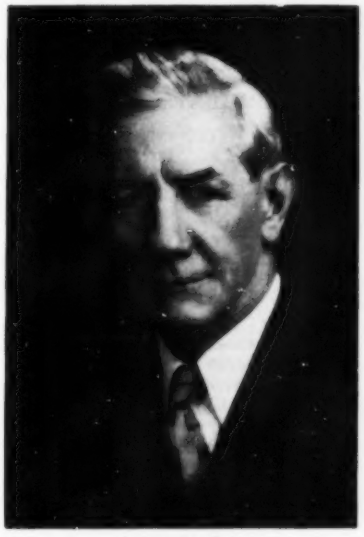
Mr. Maginn joined the Calaveras staff in 1926 as a district manager. During World War II he was a member of the Civilian Production Administration. He was recently elected president of the northern California chapter of Associated General Contractors. He is president of the San Francisco police commission, and a director of the Transamerica Corporation, the Capital Company, Lucky Stores, and the Clear Lake Water Company.

Allentown Portland Cement Acquires Valley Forge Cement

In a transaction closed at the end of December, 1953, the Allentown Portland Cement Company took over the business and property of the Valley Forge Cement Company at West Conshohocken, Pa., and will in the future operate the facilities as its Valley Forge plant. There will be no changes in the operating staff.

Incorporated in 1926 and put in operation the following year, the Valley Forge Cement Company has been since that time the only producer of cement in Montgomery County and the Philadelphia area. The total output of this plant has always been sold by Allentown.

In addition to the Valley Forge plant, Allentown operates a cement mill at Evansville, Pa., large limestone quarries and a crushing plant near Oley, Pa.



H. C. Maginn

The Tyrone Lime & Stone Company, Tyrone, Pa., is currently investing $113,000 in plant and equipment. The plant is operating with its normal complement of 55 employees.

Coming Events

April 20-22, 1954 — Boca Raton, Fla. 19th annual meeting, National Industrial Sand Association. Boca Raton Hotel.

June 13-18, 1954—Chicago. Annual meeting, American Society for Testing Materials. Eleventh exhibit of testing and scientific apparatus and laboratory supplies and ninth technical photographic exhibit. Sherman and Morrison hotels.

Piped Crushed Limestone Planned by Halliburton For Phoenix Cement Plant

Erle P. Halliburton, president of the Halliburton Portland Cement Company and chairman of the Halliburton Oil Well Cementing Company, Corpus Christi, Tex., has announced that he is planning a cement plant for the Phoenix, Ariz., area which would obtain its raw material via a 120-mile pipeline. The long-distance rock-conveyor would utilize a gravity-flow pipeline, starting at Clarkdale, and would carry a mixture of crushed limestone and water from quarries and a smelter to a proposed production plant at Phoenix, 2,400 ft. lower in altitude.

Preparation of the material would be carried out at the former smelting facilities of the Phelps-Dodge Corporation in Clarkdale. This plant, on which the Halliburton interests have an option, would be converted for processing the raw material. The Allison Steel Manufacturing Company of Phoenix had bought the smelting plant, intending to scrap it.

Mr. Halliburton stated that he planned to organize a new company and indicated that an eventual investment of more than $5,000,000 in the program. Mr. Halliburton revealed that his initial investment would exceed $1,000,000.

Cost of sluicing the limestone to Phoenix, it was estimated, would be about 5 cents per barrel, against approximately 50 cents per barrel to ship finished cement. At present Phoenix gets its portland cement from the state's only plant 90 miles away, near Tucson.

Arnold M. Ross, Mel J. London, and E. M. Barker—all vice-presidents of the Calaveras Cement Company—were recently appointed to the firm's management committee. Gardner W. Mein was named an alternate member.

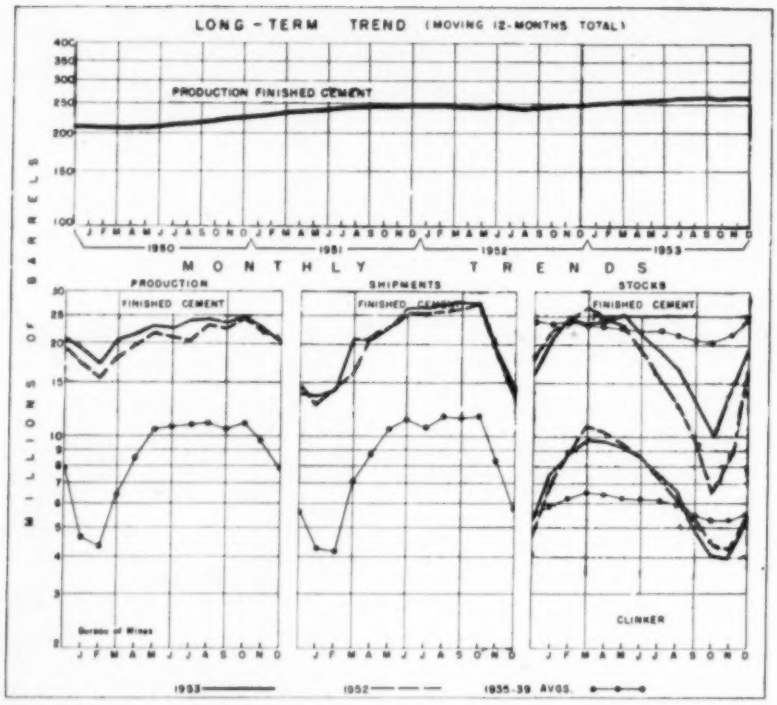
Lester C. Hawk Retires From Penn-Dixie Post As Research Director

Lester C. Hawk of the Penn-Dixie Cement Corporation, with headquarters at Nazareth, Pennsylvania, has retired after 44 years of service with Penn-Dixie and predecessor companies. He was educated at Lafayette College, Easton, Pa., and also

Lester C. Hawk

took post graduate work in chemistry there.

Prior to his Penn-Dixie affiliation (his position with the Dexter Portland Cement Company), he was an assistant to the late Richard K. Meade. He joined the Dexter Portland Cement Company in 1909 and during the ensuing 17 years he was chief chemist until he became chief chemist of the Northern Division of the Penn-Dixie Cement Corporation in 1926. His capabilities led to his appointment later as research director of the corporation on April 1, 1949, a position which he held until his retirement on February 1, 1954.



SUMMARY — Production of finished cement in December, 1953, as reported to the U.S. Bureau of Mines, totaled 20,243,000 barrels — 3 percent less than in December, 1952. Mill shipments totaled 14,130,000 barrels — 3 percent more than in December, 1952 — while stocks of 19,196,000 barrels on hand at the end of the month were 20 percent higher than those on hand December 31, 1952. Clinker production during the month amounted to 21,666,000 barrels — a decrease of 2 percent over the December, 1952, figure.

PRODUCTION — One hundred and fifty-six (156) plants located in 37 states and Puerto Rico reported a production of 20,243,000 barrels of finished portland cement during the month, compared to 156 plants which manufactured 20,881,000 barrels in December, 1952. Clinker production during the month was 21,666,000 barrels, compared to 22,020,000 barrels in December, 1952. Cumulative monthly reports indicate that approximately 264,023,000 barrels of finished cement were produced in 1953, compared to 249,091,000 in 1952.

SHIPMENTS — Mill shipments of finished portland cement totaled 14,130,000 barrels, 3 percent more than in the same month of the previous year. Shipments were higher in 11 districts and lower in 9 districts, as compared to shipments in December, 1952. The largest percentage increases in shipments occurred in the Oregon-Washington, New York-Maine, Northern California, and Ohio districts, while the major declines were noted in the Tennessee, Alabama, Puerto Rico, Iowa, and Texas districts. Cumulative totals for the year showed principal gains registered in the Virginia-Georgia-Florida-Louisiana-South Carolina-Mississippi, Indiana-Kentucky-Wisconsin, northern California, Ohio, and Western Pennsylvania-West Virginia districts, and principal declines in the Puerto Rico and Oregon-Washington districts.

STOCKS — Mill stocks of 19,196,000 barrels of finished portland cement were on hand on December 31, 1953 — 20 percent more than at the end of December, 1952 — while stocks of clinker totaled 5,308,000 barrels — 1 percent less than on the same date a year ago.

N.A.L.I. Manufacturers' Division Formed at Annual Meeting

Formation of a manufacturers' division was an accomplished fact at the seventh annual meeting of the National Agricultural Limestone Institute, Inc., held recently at the Blackstone Hotel in Chicago. Stated as the purpose of the division was the following: to work with the active members of N.A.L.I. in order to give them the benefit of the manufacturers' engineering knowledge and services and to aid them in better production methods and equipment.

E. C. Farrar, assistant sales manager, American Cynamid Company, was named acting chairman; W. H. VanBuren, assistant general sales manager, Quaker Rubber Corporation, was appointed acting secretary; and Harry Wendler, president, Highway Equipment Company, Inc., is acting chairman of the membership committee. Robert M. Koch, N.A.L.I. executive secretary, will serve as secretary of the Manufacturers' Division.

The following were designated as a committee to formulate bylaws: R. C. Johnson, sales manager, Simplicity Engineering Company; Jules Jenkins, president, Vibration Measurement Engineers; and A. M. Lowrey, assistant general sales manager, Quaker Rubber Corp.

All manufacturers wishing to have further details should contact Harry Wendler, president, Highway Equipment Co., Inc., Cedar Rapids, Iowa.

The Southwest Industrial Materials Company was organized recently in Dallas, Tex., to serve as a sales agency for several nonmetallic mining and milling operations within the freight range of the city. It will supply industries there with materials such as pumice, pumicite, and tripoli. Plans are now under way to add talc, bentonite, perlite, and vermiculite to the list.

Ways, Means Committee Votes Liberalizations In Percentage Depletion

Some major liberalizations in the percentage depletion field for nonmetallic minerals were voted by the House Ways and Means Committee on February 18. The committee's bill reclassified the percentage depletion schedule into categories of minerals which will get specific 5, 10, or 15 percent allowances, and into an "all others" category, most of which will get 15 percent. According to the bill, gypsum, natural mineral pigments, and kyanite would be included for the first time; each is placed in the latter category, and would be depletable at 15 percent, subject to certain limitations.

A 5 percent depletion allowance would specifically be given to all items now getting 5 percent, except slate, which was boosted to 15 percent. The 5 percent items at present include such minerals as brick and tile, clay, granite, marble, and shale. The committee added peat and mollusk shells to the 5 percent list.

A 10 percent depletion allowance would specifically go to coal, asbestos, brucite, lignite, perlite, and wollastonite. A 15 percent allowance would specifically go to metal mines, rock asphalt, vermiculite, slate, and chemical and metallurgical grade limestone. All of these items already get 15 percent, except slate. In addition, all other minerals not specifically listed are to get a 15 percent allowance unless they are used for the same purposes that stone is commonly used for. In that case each mineral would get a 5 percent rate.

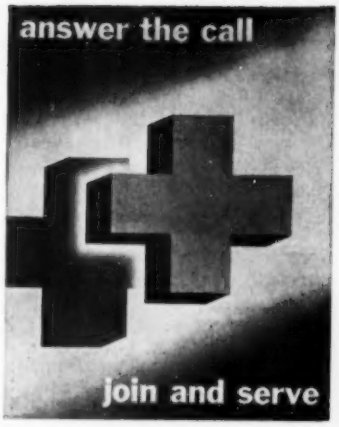
It is to be noted that under the proposed revision the end-use test for limestone would apply, and that the 10 percent category of dolomite, calcium carbonate, and magnesium carbonate written into the 1951 Revenue Act would be eliminated. Thus limestone used for ordinary purposes would continue at 5 percent and that used for chemical and metallurgical purposes at 15.

In the defining of gross income under present law, and under the committee bill, these percentages are applied to "gross income from the property". This is further defined as meaning gross income from "mining", and "mining" in turn is defined as either the extraction of the minerals or ordinary treatment processes normally applied to obtain commercially marketable mineral products. The committee bill would make it clear that crushing, granulating, and certain other steps are to be considered part of "mining" in the case of brick and tile clay. It also makes it clear that in the case of magnesite, the burning process is to be included in the "mining" definition; in the case of talc, pulverizing is to be included within the law's intent.

The committee also voted to allow reporting of combined properties. Under present law, percentage depletion allowances cannot be used to write off more than 50 percent of the taxable income from mining, and the government now requires this determination to be made property by property. The committee bill would give a mining company permission to treat two or more separate mineral interests as a single property for purposes of applying this test. These interests would have to be operated as a unit or be capable of operating that way, however. The present law does not make it clear whether or not several tracts forming a single operating unit can be grouped together for depletion purposes. Committee officials said this change was a liberalization of the present law and would benefit many taxpayers.

Concerning mine tailings, the committee voted to permit percentage depletion on minerals later recovered from slag piles or tailings. The rates would be the same as those allowed for the original mining of that mineral. At present, committee officials said, a company which takes out of a mine the high-grade ores and puts the rest into a slag pile cannot get depletion allowances if it later goes back and works over the slag pile unless the slag pile has been put aside for that purpose specifically.

The Buffalo Slag Company, Inc., Buffalo, N. Y., has spent $17,000 during the last three years for the installation of a wet chemical dust-collecting process, and a dry dust-collecting system in another plant.



● March is the month for the annual campaign of the American National Red Cross—a cause which because of its world-wide coverage should receive a 100 percent response from the American people. Despite the cessation of hostilities in Korea the work of collecting blood must go on for purposes of national defense, as well as for the routine needs of the civilian population. Nor can the Red Cross reduce its program of assistance in diasters, first aid training, water safety, and nursing services. All of these activities require money. Any and all contributions are welcomed by your local Red Cross unit. Remember—if you or your family were in need, the Red Cross services would be available for help.

August Lime Sales Higher—September Showed Decline

In August, 1953, domestic sales of open-market lime (729,195 short tons) increased 2 percent over the previous month, according to reports by producers to the U. S. Bureau of Mines. Increases were noted in all the major uses.

September sales (705,289 short tons) decreased 3 percent from August. Agricultural and building uses increased over August, whereas decreases were noted for refractory, chemical, and other industrial uses.

The accompanying table 1 shows sales by types and major uses.

Table 1—Lime Sold by Producers in the United States, in Specified Periods of 1952-53, by Types and Major Uses, in Short Tons*

	August 1953	September 1953	September 1952	January-September 1952	January-September 1953
By types:					
Quicklime	565,959	539,971	546,068	4,264,157	4,994,309
Hydrated lime	163,236	165,318	166,457	1,403,946	1,431,433
Total limet	729,195	705,289	712,525	5,668,103	6,425,742
By uses:					
Agricultural:					
Quicklime	7,852	9,578	8,336	46,961	51,532
Hydrated lime	14,665	16,984	16,867	162,340	158,293
Total	22,517	26,562	25,203	209,301	209,825
Building:					
Quicklime	16,247	17,810	18,587	159,836	146,337
Hydrated lime	85,199	85,158	85,732	707,264	705,620
Total	101,446	102,968	104,319	867,100	851,957
Chemical and other industrial:					
Quicklime	338,899	320,759	326,795	2,733,948	3,025,316
Hydrated lime	63,372	63,176	63,858	534,342	567,520
Total	402,271	383,935	390,653	3,268,290	3,592,836
Refractory (dead-burned dolomite)	262,961	191,824	192,350	1,323,412	1,771,124

*Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics.

†Approximately 60 percent of lime produced is high calcium and 40 percent high magnesium.

Rodarmel, Bayless Retire From Ideal Cement Staff—S. A. Gretencort Promoted

According to an announcement released recently by Thomas B. Douglas, general superintendent of Ideal Cement Company, three changes have been made among the firm's executive personnel.

Claude Rodarmel, Central Division superintendent, whose headquarters were at Ada, Okla., has retired after more than 50 years in the cement industry. He will be succeeded by S. A. Gretencort, who was formerly stationed at Portland, Colo. For the last few months Mr. Gretencort has been attached to the staff of the general superintendent in Denver.

Otis Bayless, Southern Division Chemist, also retired on January 1 after more than 36 years with Ideal.

Mr. Rodarmel was initiated into the cement business in 1902, when he became assistant to the superintendent of the Lehigh Portland Cement Company's operation at Mitchell, Ind. During his four years at this position the company built a second plant at Mitchell. In 1906 Mr. Rodarmel became associated with the Oklahoma Portland Cement Company, a newly-organized firm, and in 1907 he was made superintendent of its plant at Ada. Ten years later this operation joined the Ideal Cement Company, then known as the Cement Securities Company, and Mr. Rodarmel was retained as superintendent. In 1948, during Ideal's post-war expansion program, the company's plants were separated into two divisions. Mr. Rodarmel became superintendent of the Southern Division, which included the Ada, Okay, Baton Rouge, Mobile, and New Orleans operations. Later the two divisions were redivided into three, and Mr. Rodarmel was named Central Division superintendent.

Otis Bayless, former Ideal Cement division chemist.

Mr. Gretencort joined Ideal in 1938, serving as manager of the company's plaster plant at Hanover, Mont., for some time. In 1948 he went to Portland as manager of the two cement plants and the plaster plant.

Mr. Bayless first worked as chief chemist at Ideal's Ada plant in 1917. He helped to launch the firm's Okay, Ark., plant in 1929, and in 1948 he was promoted to the post of Southern Division chemist, supervising quality control at Ada, Okay, Houston, and Mobile. Later Baton Rouge was included in his territory. Both Mr. Rodarmel and Mr. Bayless were presented with large-screen television sets by fellow employees of Ideal. They will be available for consultation during their years of retirement.

Claude Rodarmel, who has retired from Ideal Cement Co. post.

S. A. Gretencort, who has succeeded Mr. Rodarmel.

Stewart Sand & Materials Names Garrett President To Succeed John Prince

George W. Garrett, who was formerly general manager and executive vice-president of the Stewart Sand and Material Company, Kansas City, Mo., has been elected president of that firm. Mr. Garrett succeeds John Prince, who was named chairman of the board.

The board of directors also elected William J. Stewart, former sales manager, vice-president.

Mr. Garrett joined Stewart Sand and Material in 1930 as assistant to Mr. Prince. Subsequently he became secretary-treasurer, and then vice-president.

George W. Garrett

His company operates a sand plant on the Kaw River and another on the Missouri; together these two operations turn out 650,000 tons per year. A crushed stone plant has an annual capacity of 500,000 tons. The firm's five concrete plants are served by a fleet of 90 transit-mix trucks.

Zonolite Company Buys Plant At North Billerica, Mass.

Acquisition of a vermiculite processing plant in North Billerica, Mass., by the Zonolite Company of Chicago was announced recently by Andrew T. Kearney, president. Vernon E. Swan will be in charge of the territory as district manager, with offices in Boston.

Zonolite mines vermiculite at its holding near Libby, Mont., and Travelers Rest, S. C. Together with affiliated companies, Zonolite now operates 41 processing plants throughout the United States and Canada.

N.S.G.A.-N.R.M.C.A. Conventions, Exhibit Attract Record Crowd

The combined annual conventions of the National Sand and Gravel Association and the National Ready Mixed Concrete Association, with their joint Machinery Exposition, were held February 15-19, 1954, at the Conrad Hilton Hotel, Chicago, Ill. New records were set in attendance, both of producers and machinery manufacturers, and in the number, size, and variety of the exhibits. Never was more interest shown in the papers and discussions, and in the machinery exhibited. The keynote of the meeting was optimism and faith in the future of this country. This was particularly noticeable in the report on business prospects in 1954. Outstanding producers from various sections of the country reported that 1953 was a record year and that 1954 will probably be equally as good in spite of a somewhat slow start. Some producers even predicted substantial increases in their areas. However because of increasing costs and tighter pricing conditions, it was generally felt that profits would be somewhat lower than in 1953. This confidence in the future of these industries is evident in the large volume of new plants and plant improvement and expansion programs known to be under way or definitely planned.

New officers were elected by both associations and by the N.S.G.A. Manufacturers' Division. The new president of N.S.G.A. is John W. Murphy (Union Sand & Gravel Co., Spokane, Wash.). Roy E. Weaver (Lincoln Sand & Gravel Co., Lincoln, Ill.) was elected vice-president. The new secretary-treasurer is E. Phil Gemmer (Texas Construction Material Co., Houston, Tex.). Harry E. Bender (Azusa Rock & Sand Co., Azusa, Calif.) was elected to the executive committee.

The new chairman of the manufacturers' division is R. P. McKenrick (Blaw-Knox Co.), and W. A. Rundquist (Pioneer Engineering Works) replaced him as a vice-chairman. R. W. Hernlund (Western Machinery Co.) is the new member of the board of directors.

One of the major highlights of the convention was an address given by Representative W. Sterling Cole (R., N. Y.), Chairman of the Joint Committee on Atomic Energy, on the military aspects of the atomic energy program. Because of its outstanding importance, the speech was given nationwide coverage by the newspapers, radio, and television.

R. P. McKenrick, Blaw-Knox Co., (left), newly-elected chairman of the N.S.G.A. Manufacturers' Division, receives congratulations from E. M. Heuston, Bucyrus-Erie Co., retiring chairman.

The new officers of the National Sand and Gravel Association are, left to right: John W. Murphy, president; Roy E. Weaver, vice-president; and E. Phil Gemmer, secretary-treasurer.

A major address was given by Representative W. Sterling Cole, chairman, Joint Committee on Atomic Energy.

Representative Cole reported that both our atomic and hydrogen weapons programs were progressing rapidly, although for security reasons he was unable to indicate the extent. However, he pointed out that an entire family of hydrogen weapons is within the realm of possible development which would be comparable in versatility to today's fission weapons.

The speaker highlighted his address by stating that the best means of preventing nuclear war lies in maintaining and even increasing the strength of our retaliatory striking forces. He called for accelerating our efforts to improve our defenses. In line with this, he mentioned the possible use of small size atomic weapons adapted to anti-aircraft defense, which could destroy an entire fleet of enemy aircraft.

Newfoundland Govt. to Sell Atlantic Gypsum, Ltd., Plant

Sale of the plant of Atlantic Gypsum Ltd., built by the government of Newfoundland at Humbermouth at a cost of about $3,000,000, has been advertised. The plant is the second of three government-built and owned industries to be offered to private interests. A cement plant at Humbermouth has already been sold to European investors. Capacity of the gypsum facilities is 200 tons of gypsum daily and 250,000 sq. ft. of wallboard.

Raw material comes from deposits at Flat Bay, on the west coast, where, according to geologists, there are resources sufficient for 200 years. Other gypsum deposits are said to be available in the area.

Ocean-Going Cement Ship Added to Halliburton Fleet

When the *Halliburton 206*, 124-ft. 6-in. ocean-going vessel was commissioned recently at New Orleans, the Halliburton Oil Well Cementing Company rounded out its marine equipment for year-round offshore cementing of wells.

Despite the length of the craft, which could easily cross the ocean, it was so constructed that it can operate in the shallow Louisiana bayous as well as in the Gulf.

SOIL ACIDITY (LOW pH) SPELLS FERTILITY DEFICIENCIES

By **WILLIAM A. ALBRECHT**
University of Missouri

Acidity is a common soil condition in many parts of the temperate zone. It occurs where the rainfall gives water enough to go down through and to wash out much of the fertility. In general, if the rainfall is high enough to provide plenty of water during the crop-growing season, there will also be enough water, with its carbonic acid, to leach the soil or to give it hydrogen in place of much of its supply of plant nutrients, and thereby make it acid.

Acid soils differ in their degrees of acidity, expressed as negative logarithms or what are known as pH values. Accordingly, then, a higher degree of acidity is represented by a lower pH value, or figure. This merely means that as more hydrogen has come in, less fertility or other positively charged nutrients are left there. Timbered soils of the eastern United States are acid; also those of the eastern edge of the prairie are sour. Acidity is a natural condition where soils have had rainfall enough so they have been growing much vegetation. Such soils have therefore been subjected (a) to a leaching force taking the fertility downward, and (b) to the competitive force of the vegetation with its roots taking the nutrients upward. In the latter case, those nutrients are built into organic combinations of them *above the soils of the forests and within the surface soils of the prairies.* Consequently acid soils have distinct surface soil and subsoil horizons in their profiles. They are naturally low in fertility, especially in the subsoil, and have been growing mainly carbonaceous or woody vegetation. It is no small soil's problem to have such soils grow protein-supplying, mineral-rich, highly nutritious crops.

Natural soil acidity is in reality, then, mainly a shortage of fertility in terms of many plant nutrients reflected in the physiological simplicity of the vegetation. This is the situation because the soil has been under cropping and leaching for ages. This was true before we took over to intensify these fertility-depleting effects. This, then, is the condition of the soil that prompts the common question, "How can we grow mineral-rich, fertility-consuming forages, like the legumes, of good feed value for such high-powered, protein-producing animals as cows?"

A Little Science Led Us Astray

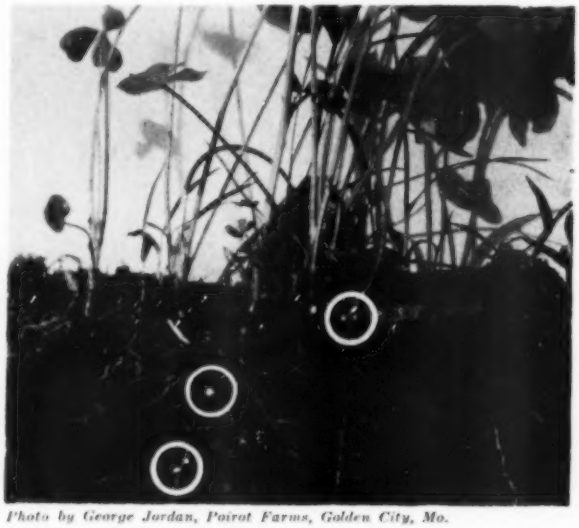
It was the growing agricultural science of the early decades of the 20th Century that brought liming of the soil back as a more general agricultural practice. We cannot say that liming was an art carried over from colonial days. It had been pushed out when fertilizers came into use. Liming the soil has become an extensive practice under the encouragement of an embryo soil-testing service. That service was guided by the belief that the applications (a) of limestone, which is a carbonate of calcium; (b) of hydrated lime, which is an alkaline calcium hydroxide; or (c) of quicklime, which is a caustic oxide of calcium, are all beneficial for crop growth because each of these is ammunition in the fight against soil acidity, or against the high concentration of hydrogen in the soil, or the soil with a low pH figure, as the degree of acidity is now regularly expressed.*

This struggle to drive the active hydrogen ion, or acidity, out of the soil was aided by the technological advancements giving us instruments and equipment that measured the hydrogen ion to a finer degree than known before. *The ease and speed with which soil acidity could be detected and measured encouraged the widespread testing of soils.* This activity discovered soil acidity almost everywhere in connection with extensive agriculture. Through the help of the pH-measuring gadgets we were impressed by the apparent universality of soil acidity. Only a few humid soils were not seriously stocked with acid.

We discovered that for acid soils, in general, the productivity was lower as the degree of acidity was higher, or as the pH value for the soil was a lower figure. From such a discovery we might expect to conclude—even though it was later found to be the wrong conclusion—that the *presence* of the large concentration of hydrogen ions in the soil, or a certain low pH value, was the *cause* of the poor crops. This conclusion would be expected also from the bigger troubles in growing the proteinaceous, mineral-rich legumes of higher feeding values and of more physiological complexity through which these values alone are possible.

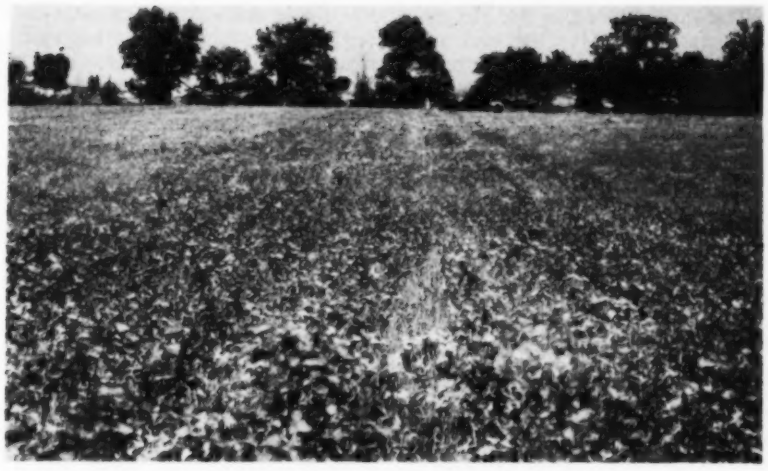
The extensive use of limestone in the corn belt has now multiplied itself into the millions of tons of these natural rock fragments that are annually mixed through the soil. This increased use was prompted by the

*The pH figure is the logarithm of the concentration of the active hydrogen or ions, not molecules. Distilled water has one millionth of a gram (.000001 or 10 to the minus 7 gm.) of active hydrogen per liter, said to be a pH of 7.0. Such water tastes flat. With a bit more acidity or ionized hydrogren (.00001 or 10 to the minus 6 gm.), or more acidity at a pH of 6.0, it tastes better. Thus, as the pH value is smaller, the degree of acidity is higher because there are more active hydrogen ions per unit volume as the hydrogen ion concentration is higher.



Drilling the limestone (white streak, upper circle with nodules) to feed the young red clover plants some extra calcium helped them to develop nodules (lower circles) in the unlimed soil with a pH of less than 5.0.

Photo by George Jordan, Poirot Farms, Golden City, Mo.



By putting calcium chloride (Dow Flake) into the right-hand half of the fertilizer drill, the better soybeans resulted in the right-hand streak in the field. The next streak resulted from calcium nitrate applied similarly. Both made the soil more acid. The rest of the improvement resulted from calcium hydroxide, making the soil less acid. All applied the plant nutrient calcium, which caused the crop improvement.

belief (a) that limestone is beneficial because its carbonate removes the acidity of the soil, and (b) that soil is most productive if it is neutral, or when it has no active hydrogen ions in it; that is, when the soil has a pH of 7.0, or near that value. Under these beliefs (now known to be poorly founded), we have become belligerent foes of soil acidity. Limestone has become the ammunition for fighting this supposed enemy hidden in the soil. With national financial aid, we have been prone to believe that in putting limestone on the soil we can follow the old adage which says, "If a little is good, more will be better." We are just now coming around to a fuller understanding of how nature grew crops on the acid soils before we did, and that crops are not limited to growth within certain pH values when they are well nourished by ample, well-balanced fertility.

Science Now Shows Limestone Feeds Crops—Doesn't Fight Soil Acidity

Only recently have we recognized the fallacious reasoning behind the conclusion contending that it must be the presence of acidity in the soil that brings crop failure when liming lessens both (a) the degree of and (b) the total of the soil acidity while making better crops at the same time. While the convenience of soil-testing gadgets for refined points of pH was encouraging this erroneous belief about soil acidity as an enemy, it was the diligent study of the physiology of plants, of the colloidal behavior of the clays growing them, and of the chemical analyses of them all that finally pointed out the errors of such hasty conclusions. It indicated that the presence of soil acidity is not detrimental, but that the absence of fertility, represented by the acidity, is the real trouble. On the contrary, some acidity can be, and is, beneficial.

We now know, of course, that in applying the limestone, which is calcium and magnesium carbonate, there is possibly some reduction of the degree and the total acidity by the carbonate portion. At the same time there is applied also some calcium and some magnesium—nutrients highly deficient in the leached soils—to nourish the calcium-starved and magnesium-starved crops. These nutritional services come about both directly and indirectly. We have finally learned that it is this better nourishment of the crops, rather than any change in the degree of acidity, or any raising of the pH value, of the soil that gives us the bigger and better crops. Unwittingly we have been fertilizing the crops with calcium simultaneously while fighting soil acidity with the carbonate, the hydroxide, or the oxide of lime.

Regardless of our ignorance of how lime functions, we have unknowingly benefited by using it. However, an erroneous understanding of what happens to crops and to the soil when we apply lime, cannot successfully lead us very far into the future. We dare not depend forever on accidents for our good fortune. We cannot continue to grow nutritious feeds under the mistaken belief that we do so merely by changing the pH, that is, the degree of acidity, or by the removal of the soil acidity through the use of plenty of any kind of carbonates on our humid soils. Wise management of the soil to grow nutritious feeds can scarcely be well founded on facts so few and so simple.

Simple Tests Show Lime Is Beneficial through Calcium

Should you decide to demonstrate for yourself the truth of what has been said above, you might apply some soda-lime, or sodium carbonate, to acid soil. This will increase the pH of the soil. It will reduce its total acidity. But while this soil treatment will rout the enemy, *i. e.* soil acidity, and raise the pH toward 7.0, it will still not give successful crops. Merely removing the acidity by a carbonate (of sodium—a non-nutrient—rather than of calcium, in this case) does not guarantee the successful growth of the crop.

As proof that it may be calcium as plant nourishment that is the helpful factor in liming a soil, one can repeat Benjamin Franklin's demonstration and apply calcium sulphate, that is, gypsum, to the soil. One might even apply some "Dow Flake", a calcium chloride. Either of these calcium-carrying compounds will make the soil more acid; either will *lower* the pH decidedly. In spite of this fact and because they add calcium, the gypsum and the "Dow Flake" will improve the crops on the initially acid soil either left so, or made more acid. We are now resurrecting the ancient art used by Benjamin Franklin, for whom liming the soil was a matter of fertilizing it with calcium sulphate, and not one of fighting soil acidity with calcium carbonate.

Soils Made Neutral Are Not Necessarily Made Productive

While we were fighting soil acidity, we failed to notice that most of the populations of the world are concentrated on acid soils. They are not in the humid tropics, where the soils are not acid or where the clay doesn't adsorb much hydrogen or even much of any nutrient cation. Nor are they on the arid soils that are alkaline (high pH values)—a reaction opposite to the acid (low pH values). Soils that are not acid are not necessarily the supporters of many peoples. Yet in fighting soil acidity we labor under the belief that if a soil were limed to the point of driving out all the acidity, such a soil should be highly productive.

We now know that even while a soil may be holding considerable acidity or hydrogen, it may be holding also considerable calcium or lime. To a much smaller extent of its exchange capacity, it is also holding nutrients other than calcium.

Among these are magnesium, potassium, manganese, and others. But these in total are held in much less quantity and by less force than are either the calcium or the hydrogen — the former a nutrient and the latter a non-nutrient cation, or a positively charged ion. Should we put on lime or calcium enough to drive all the acidity out of the soil, that is, to make it neutral or to bring it to a pH of 7.0, by putting calcium in place of the hydrogen, all the other nutrients would be more readily driven out than would this acid-giving element.

Liming the soil heavily, then, does not necessarily drive out only the acidity, *i.e.* the hydrogen cations. Instead, it would also drive out all other fertility cations except calcium. It might load the soil with calcium so completely that it could offer only calcium as plant nourishment. Plants would then starve for other nutrients even though on a neutral soil. Plants on such a non-acid but calcium-saturated soil would be starving for all the same nutrients, except calcium, as they do on the acid soils. Making soils neutral by saturating them with calcium does not, therefore, make them productive. This is the situation of some of the neutral (pH 7.0 and higher) semi-arid soils of our western states. In our struggle against soil acidity we need to remember that neutral soils are not the productive soils. Instead, productive soils are the acid yet fertile ones that feed us and nourish the major portion of the other peoples of the world.

Some Soils Need Their pH Changed Much, Others But Little

By considering the increasing degrees of soil acidity simply as increasing deficiencies of fertility, we find in Nature, in general, that as the degree of acidity is higher (pH figure is lower), the adsorption or exchange capacity of the soil* is saturated to a higher degree (larger percentage) by the positive ion, or cation, hydrogen. With this higher saturation by hydrogen, there are more hydrogen ions per unit of exchange capacity active or not held inactive by the soil; consequently the degree of acidity is higher. The acid is stronger. There are more hydrogen ions to make contact with the measuring electrode, and the pH value is therefore lower.

*The exchange capacity is expressed as milliequivalents (M. E.) per 100 grams of soil. One M. E. means 1 milligram (.001 gms.) of hydrogen or its equivalent. One M. E. per 100 gms. equals 1 gm. in 100,000 gm. or 10 in a million, or 10 pounds in a million or 20 pounds in two million of soil (acre 6 2/3 in. deep).

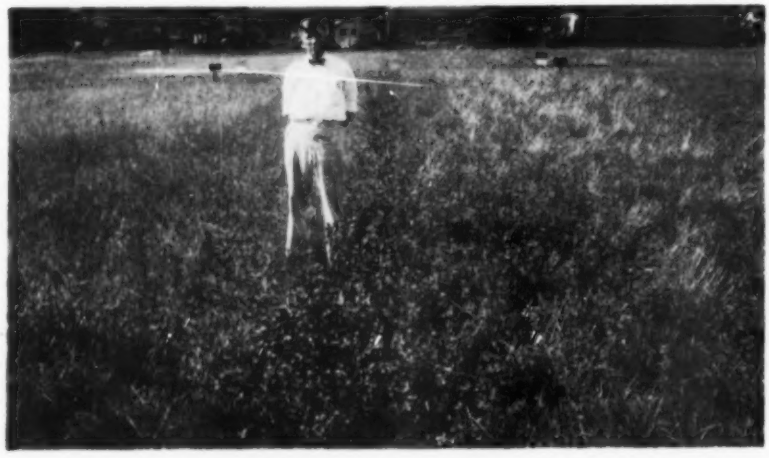
The same holds true for the degree of saturation of the soil's exchange capacity by calcium, or magnesium, or potassium. As the degree of saturation by any one of these nutrient cations goes higher, more of it is active in making contact with the plant root and in getting into the growth activities of the plant. These cations are nutritional helps coming from the same source as the hydrogen cation, namely, the soil colloid. The hydrogen coming from there is not. *Because we have had the gadgets to measure the hydrogen, we have emphasized the pH, or the presence of a certain degree of acidity.* We have not emphasized the absence of all the many fertility cations resulting because the hydrogen has replaced them on the negatively charged exchange complex or colloid of the soil. We have not had simple gadgets to measure them.

If, then, we should have a sandy soil, for example, (low in clay content and thereby low in exchange capacity) with a low pH value or a seriously high degree of acidity, or hydrogen saturation, this would conversely represent a low degree of saturation of its exchange capacity by calcium, magnesium, potassium, and other nutrient cations. Accordingly, then, the addition of but a small amount (two tons per acre) of limestone (calcium and magnesium carbonate) would move the pH value up decidedly or shift the degree of acidity to neutral.

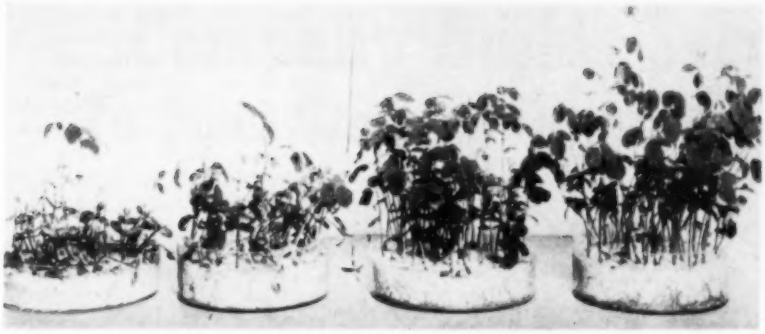
This is similar to changing the degree of heat of a cup of scalding hot coffee by putting an ice cube into it. Here a little ice lowers the degree of heat very much where there was little total heat. With the sandy soil's low exchange capacity there could not be much total hydrogen, even if the degree of activity by it is high; consequently, the pH is changed decidedly toward neutral and the acidity is completely removed. The exchange capacity is loaded very highly, in turn, by the calcium or magnesium of the limestone. Then, accordingly, these two nutrients become highly active in plant nutrition to make legume crops succeed well where on this sandy soil they may have previously failed.

By doing no more than using the gadgets, in this case, to measure the change in pH (or in the degree of acidity), resulting from liming the soil, one would conclude readily that the crop grew better because the pH was changed or the acidity was neutralized. One would not concern himself very commonly about the increased amounts of calcium, magnesium, and other nutrient ions which became so much more active to nourish the plant better. We have no simple gadgets to measure these effects; hence we attribute the crop improvements to the wrong causes. Grazing animals probably make no such mistakes in their choices of forages, judged according to nutritional values in terms of calcium and magnesium, rather than in terms of pH of the soil.

If, on the other hand, we should have a heavy clay soil (high in exchange capacity) with a seriously low pH value, or a high degree of acidity, and conversely, of a low degree of saturation of its exchange capacity by calcium, magnesium, potassium, and other nutrient cations, the addition of the same amount of limestone as was applied to the



Red clover failure was prevented in this division strip between the plots by trimming out the nurse crop early, or by eliminating competition for potassium. Clover was a partial success on the right, where potassium was applied. It was a failure on the left, without potassium. Clover failed there because of fertility deficiency, and not because of soil acidity. Sanborn Field, Columbia, Mo.



Clear glass jars of white sand given increasing amounts of a very acid calcium-hydrogen clay grew healthier soybean plants as more clay gave more exchange capacity and more total calcium to nourish the plants. The healthier plants resulted from better nutrition. The sick plants resulted from poorer nutrition and not from the low pH value or the soil acidity, which was the same in all of them.

sandy soil would not change the pH value or the degree of acidity significantly.

This would be similar to dropping an ice cube of carmine solution into a bathtub of scalding hot water. The cooling effect would not be recognized, but the coloring effect would. Because the larger exchange capacity and larger total amount of hydrogen would keep almost the same amount of it active in spite of the relatively small amount of limestone, there would be no measurable change in the pH of the soil as it is commonly sampled and tested. Yet the calcium (magnesium) carbonate would react with the soil to be adsorbed by it on the soil's colloidal complex. It would exchange from there to the plant roots to improve the legume crop, even if much active hydrogen left in the soil maintained the pH of the soil near the initial value. There would be focal points of calcium (magnesium) in the soil (significantly so if the limestone was drilled) to exchange these nutrient cations more actively to the plant roots than before the soil was limed. Hence the two tons of limestone on the clay soil, intially considered of seriously low pH value, may not have changed the pH, although it established the legume where it failed previously.

Thus clover may be established on the sandy soil by two tons of limestone where the pH was changed to a decidedly higher value. Also, clover may be established on the clay soil by two tons of limestone where the same pH value was not changed significantly. Plant behaviors tell us that the changes in the pH values are not contributions to the improvement of the crop growth. On the contrary, it is the liming as a remedy of the fertility deficiency in its application of calcium (magnesium) for the crop, and not the change of the pH or degree of acidity by the carbonate that is the responsible factor in crop betterment. Different soils may differ widely, then, in the extent to which their pH values (or degrees of acidity) are changed by soil treatment for growing better crops, when it is the deficiency of fertility — and not the degree of acidity — that is the cause of the trouble on so-called "acid" soils.

Experience Is a Thorough Teacher

It was just such a case of confusion about what pH really means and how liming the soil serves plants as cited above, which put a county agent of Missouri into an embarrassing predicament many years ago. This occurred when the campaigns for "Lime for Clover and Prosperity" and "Lime for Legumes and Livestock" were at their height. A farmers' meeting under his leadership was held one autumn day on a farm where the soil was about to be prepared for wheat serving as a nurse crop for red clover. The crowd assembled at the first field on the river hill, a windblown bluff of very fine sandy loam. After testing the soil and finding it seriously acid (of low pH figure), it was agreed that, according to this pH report on the soil, two tons of limestone per acre were needed to grow red clover.

The farmer crowd then moved down into the river bottom to the second field, made up of a heavy clay soil. This soil, under acidity test, revealed the same degree of this trouble. The same amount of limestone per acre, two tons, was deemed necessary as for the field of fine sandy loam.

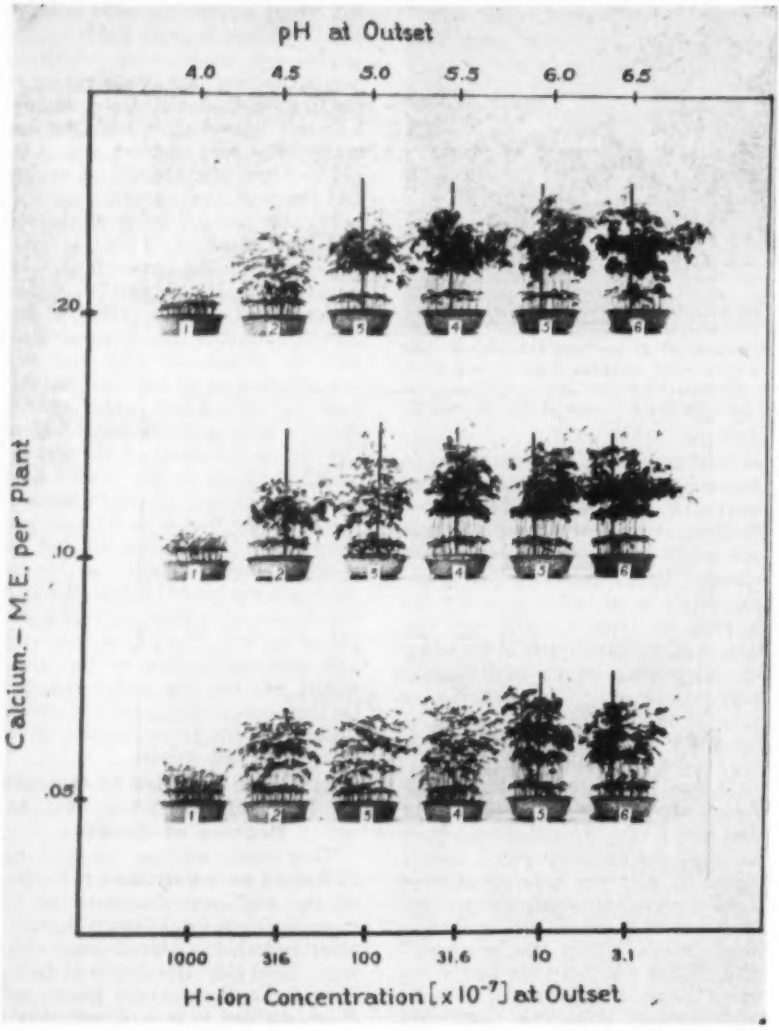
After both fields had been plowed, the two tons of limestone per acre were applied. The soils were disked, the wheat was seeded and followed by the clover seeding the following early spring. The clover stands in the wheat stubble the next autumn were excellent in both fields.

This was reason, and considered a good setting, for another farmer meeting on liming and soil acidity. This one started again with the fine sandy loam soil, and the test of its pH to reveal the absence of acidity and the good clover there, supposedly because the pH value of the soil had been changed to that of neutrality. But in the second field, with its clay soil, the degree of acidity under re-test was the same as before the limestone had been applied. Yet the crowd observing this test was standing in an excellent stubble crop of red clover. The county agent was in a predicament. Here the liming treatment of the soil established clover in the second field without changing the pH of the soil, when on the first field he had just pointed out that liming the soil established clover because, as he erroneously explained, it had changed the degree of acidity, or raised the pH of the soil. The pH of these two soils was not shifted to the same extent, nor was the acidity changed by the same degree; yet the clover shifts were the same, namely, from failure to good stands.

Plants Are Sensitive to Degrees of Fertility Deficiency, Not to Degrees of Acidity

That plants are not "sensitive to, or limited by, a particular pH value of the soil" was demonstrated by experiments at the Missouri Agricultural Experiment Station some years ago. The clay fraction was taken out of the Putnam silt loam, and electrodialized to make it completely acid (replacing the nutrients by hydrogen) which gave it a pH value of 3.6. Six lots of this soil were set apart. Each was titrated with limewater to reduce its acidity to a certain particular degree, or specific pH figure. The lots represented the following series of pH values, namely, 4.0, 4.5, 5.0, 5.5, 6.0, and 6.5.

Enough clay was taken from each lot of this series of clays to represent .05 milligram equivalents (M. E.) of exchangeable calcium per plant for a total of 50 plants, and put into pans of equal amounts of quartz sand. In a second series, enough clay from each lot was taken to provide .10 milligram equivalents (M. E.) of calcium per plant in each of the six pans of sand, or doubling the amounts corresponding to the different pH values in the first series. A third series of these same different pH values of the soil was set up similarly, except that enough clay was used to provide .20 milligram equivalents of calcium per plant, or



These series were triplicates as to their respective pH values of the soil at the outset. But their exchange capacities were made the double (0.10 M.E. per plant) and the quadruple (0.20 M.E. per plant), respectively, in the middle and upper series, of that in the lower one by adding double and quadruple amounts of calcium clay. Thereby the corresponding extra exchangeable calcium was added. By this increase of calcium as nutrition, the plant's sensitivity to pH was moved from pH 5.5 (lower series) to pH 5.0 (middle series), and to pH 4.5 (upper series), or a shift to 10 times as much acidity (31.6 to 316). Plants are much more sensitive to fertility deficiencies than to degrees of soil acidity (pH).

four times as much calcium in each pan as in the first series. Thus the three series were triplicates in pH values of the soils, but there was more clay, more adsorptive-exchange capacity, and more exchangeable calcium by two and four times in going to the second and third series from the first.

Observations of the soybean crops grown on these pans suggested different so-called "sensitivities to pH values" by this crop. By observing the first series containing the least amount of clay in the sand (the most sandy soil), and thereby the least amount of calcium for the crop (.05 M. E. per plant), one would have concluded that soybeans are sensitive to a pH of 5.5 but are not so to a pH of 6.0. Had one observed only the second series, the corresponding figures in one's contention would have been pH 5.0 and 5.5. But had only the third series been open for observation, one would have put the "sensitivity" value at pH 4.5 and not at pH 5.0.

Here, then, a lower pH value (or a higher degree of acidity) by as much as ten times was the difference in sensitivity brought about by offering four times as much exchangeable calcium as nutrition for the plants. This was brought about merely by giving more clay, a heavier texture, to the soil at the same degree of acidity in the series, or at the same pH. More exchange capacity offset the significance erroneously ascribed to the pH.

Still more significant was the change in the pH values of the clay-sand soils as the result of growing the soybean plants on them. The three more highly acid soils of pH values, 4.0, 4.5, and 5.0 in the three series *had all become less acid*. The growth of the crops had made their pH values in these nine cases move upward, or shift toward neutrality. The three less acid soils of pH values 5.5, 6.0, and 6.5 in the three series *had all become more acid* in consequence of growing the crop; or this crop growth had moved the pH values downward in these nine soils, away from neutrality. These shifts in pH values were as much as 1.5 pH, where the original pH values were 6.5. The soils in these instances were made 32 times more acid by only the partial or limited growth of the crop. Surely, then, when the growth of the crop, or the activities of the plants by way of the roots' contact with the soils make these soils 32 times more acid, one would scarcely say that it is the pH of the soil to which the crop is sensitive, or that a crop will grow only when a certain restricted pH or degree of acidity of the soil prevails. Plants are very sensitive to minute degrees of fertility deficiencies, but certainly not to degrees of acidity of very wide ranges.

Wise Soil Management Aims at Plant Nutrition Rather than Acidity Removal

Liming the soil, then, is a matter of putting active calcium and active magnesium into the acid soil, or even into one that is not necessarily acid. These two elements need to be in certain ratios of their respective degrees of saturation of the exchange capacity of the soil, if that soil is to grow legumes or protein-rich crops. For calcium, this may well be 75 percent, while for magnesium it may well be near 10 percent. For potassium the percentage saturation of the exchange capacity of the soil occupied may be from 2 to near 5. Just what percentage the other cations, especially the trace elements, should each occupy has not yet been specifically suggested. We need, then, some gadgets to measure the activities of the calcium, the magnesium, the potassium, and other nutrients. *Instead of becoming so serious about the pH of the soil, we need to become much more serious about pCa, pMg, pK*, etc., since these are activities of the nutrient

(*Continued on page* 130)

Company Builds Second Plant
To Meet Growing Demand in Toledo Area

A general view of the Michigan Stone Company's plant near Trilby, Ohio, showing the primary crusher building (left) and the return conveyor from the hammer mill reduction crusher.

another ON THE SPOT report

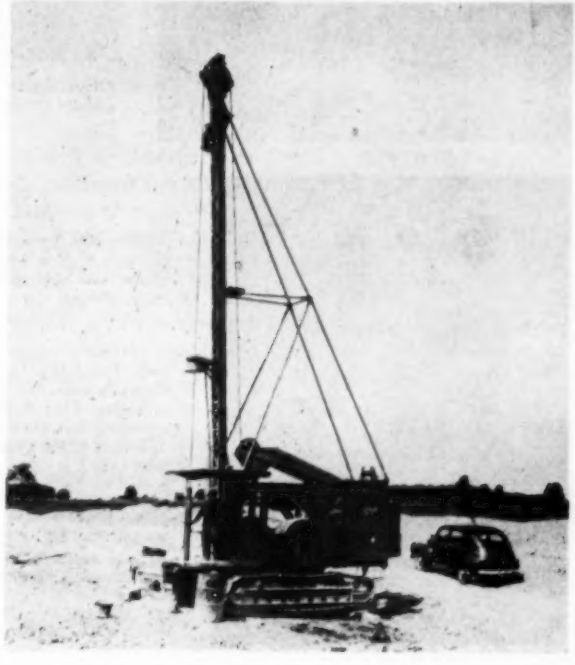
When the Maumee Stone Company in 1946 built a new crushed stone plant in Maumee, Ohio, 10 miles southwest of downtown Toledo, it was believed to be capable of handling any possible increase in demand for some years to come. Within a few years, however, it became necessary to increase the capacity of this operation. This was done in stages over a period of several years. When the demand again caught up with capacity about two years ago, it was decided to build a second plant at a location about 10 miles northwest of Toledo in order to serve a wider area and to shorten hauls. The Michigan Stone Company, owned largely by the same interests, was formed to build and operate this plant.

By WALTER E. TRAUFFER

A number of possible deposits were investigated before a selection was made. The site chosen contained a high grade of limestone with comparatively light overburden; it is accessible to good highways to the principal market areas. It is located 2½ miles northwest of Trilby, Ohio, but is actually in Michigan, about 2 miles north of the Ohio-Michigan line. This deposit was acquired early in 1952. Construction of the plant began late in the summer and was completed in January, 1953. Late in 1952 enough overburden was removed for fills along two sides of the property to protect the highways and to make room for stockpiles.

The plant, designed by R. J. Heckathorn, plant engineer for both companies, has a rated capacity of 125 t.p.h. but has produced up to 200 t.p.h. under favorable conditions. Provision was made for increasing the screening capacity and the production of agricultural limestone, and this is now being done.

The original deposit consists of 60 acres with the plant on another 10-acre plot. The company has another 60 acres of good limestone across a highway, which is now the location of its powder magazine. Naturally and artificially barricaded, this magazine meets all state requirements. It consists of two separate structures, one for dynamite and one for caps. Both have soft brick walls and concrete roofs and are surrounded by 15-ft.-high earth embankments.



The crawler-mounted 6-in. well drill which does all drilling for primary shooting.

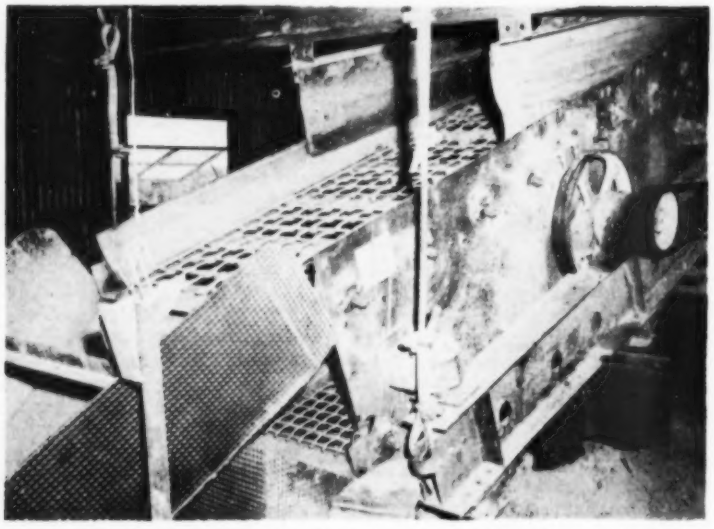
The overburden on this deposit varies from 8 in. to 2½ ft. in depth and is removed by contract. The deposit has been core drilled to a depth of 80 ft. without running out of good rock. The quarry is now 38 ft. deep but will go down to 60 ft. when it has been fully developed. Drilling is done with a Bucyrus-Erie 29T well drill using a 6-in. bit, penetration averaging about 8 ft. per hr. in this medium-hard rock. Single-row delay shots are made, usually with six holes. Very little secondary breaking is necessary, and most of this is done with a 3,000-lb. pear-shaped drop ball operated from the shovel. A jackhammer and a portable compressor are rented a few days per month to break up larger rocks.

The stone is loaded by a Model 820 Osgood shovel with a 1½-cu. yd. dipper and a Caterpillar D13000 diesel engine. Three Ford F7 trucks with Daybrook 6-ton capacity end-dump bodies haul about 1,000 ft. to the plant. Two-speed rear axles make it easy to negotiate the 8 percent grade out of the quarry. At the plant the stone is dumped on a 36-in. by 8-ft. Austin-Western apron feeder controlled by pushbut-

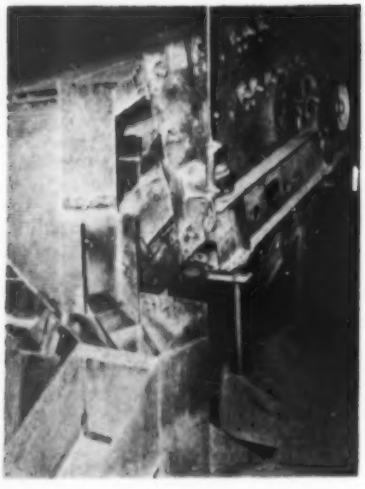
(*Continued on page* 128)

F. E. Friesner, plant superintendent, and R. J. Heckathorn, plant manager for the Michigan Stone Company and the affiliated Maumee Stone Company.

The 1½-cu. yd. diesel shovel loading one of the company's 6-ton trucks which will haul the stone to the plant.



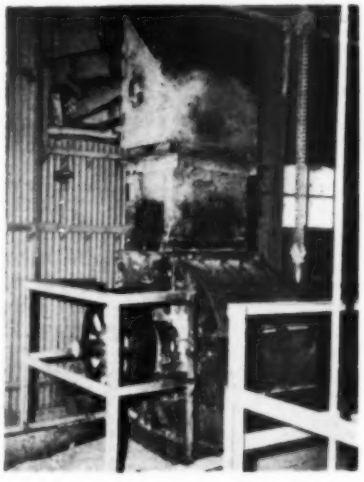
Above right: The 4- by 10-ft. 2-deck primary screen which scalps oversize through a chute to the pulverizer feed bin.



Above, left: A truckload of stone being discharged from a quarry truck to the apron feeder and bar grizzly ahead of the primary crusher.

Left: The 4- by 12-ft. 3-deck sizing screen. Oversize from this screen also goes to the pulverizer bin. Note that the chute is so arranged that when this bin is full, the stone overflows to the chute of the regular storage bin.

Right: The No. 4 hammer mill used for reduction crushing, with the 2- by 6-ft. electric vibrating feeder above.



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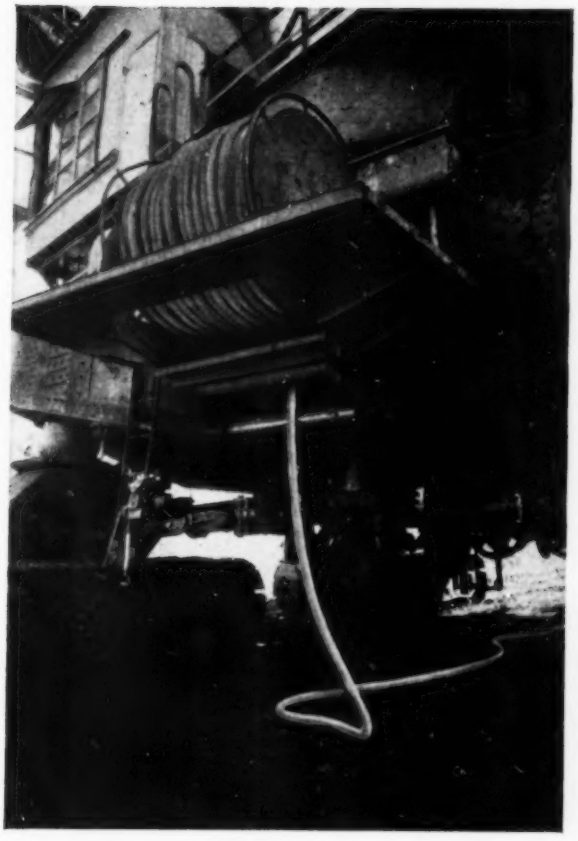

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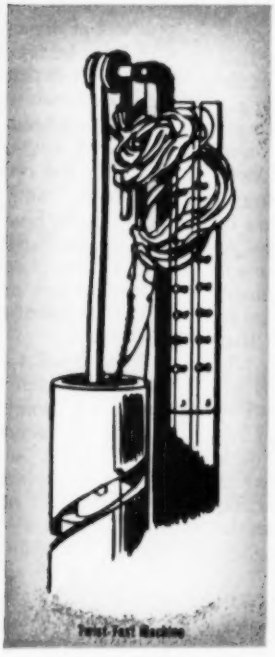

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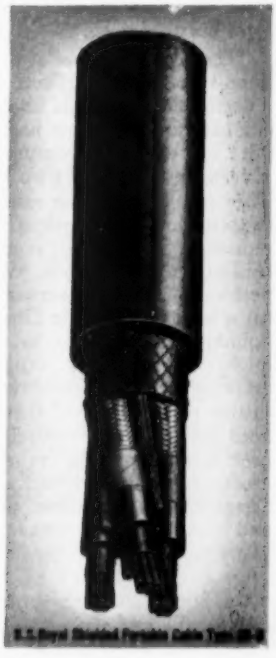

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WASHINGTON NEWS LETTER

another P-and-Q exclusive

PEOPLE in Washington, and in the rest of the country, are talking about the state of the economy. The President has sent his Economic Report to Congress and the joint Senate-House Committee on the Economic Report have been listening to a parade of economists from business associations, companies, labor unions, universities, and other public organizations.

That the President is not alarmed by the state of the economy is seen from this very reassuring statement from him:

"The slight decrease of production since mid-summer reflects primarily a decline in the rate of inventory accumulation. Final purchases of output by business, consumers, and government have kept up very well. Thus far, at least, the readjustment process has been largely a matter of reducing inventories, especially of consumer durable goods. While competition has become keener, business firms have shown little disposition to liquidate excess stocks in ways that might aggravate the situation. By granting more favorable terms, by adjusting prices here and there, and by applying more effort to selling, business should be able to ease their inventory situations and achieve a better balance between production and sales during the next few months —*providing final expenditures continue at their recent high and stable level.* Such a corrective process seems clearly to have gone some distance. Over the last two months of 1953 inventories declined generally, while retail sales were generally sustained. Should this development continue, the moderate contraction now under way should come to a halt soon."

The key to the whole statement is found in the words in italics. The business decline is expected to be moderate and short, provided that business, consumers, and government continue to spend.

That the Administration expects business expenditures to continue at a high level is seen from the citation in the report of the government's recent survey, which disclosed that business expected to maintain the average 1953 rate of capital spending during the first quarter of 1954, and the corroborating McGraw-Hill survey of investment plans for 1954, which indicated that business intended to spend for plants and equipment only 5 percent less than the unprecedented $28,000,000,000 spent in 1953. The government's report also states that:

1. "Statistics on contracts for commercial and industrial construction likewise indicate a high level of investment expenditures in the early months of 1954."

2. "It is clear that the termination of the excess profits tax of January 1, 1951, will give some support to investment."

3. "The generally strong financial position of business firms will likewise help to support a high level of investment expenditure."

4. "Research and development activities of industry, non profit institutions, and government are steadily enlarging the opportunities for new investment," and finally,

5. "Despite heavy post-war installations, a substantial volume of productive facilities is approaching 'normal' retirement age or has become obsolete as a result of recent technological advances."

With regard to consumer expenditures, the President's report is far less certain. It points to the recent reduction in income taxes and concludes that it "will tend to act as a support to disposable income". Citing the high level of savings in recent years, it suggests that "businessmen who push new or improved products, who produce established goods at lower costs, or who practice more aggressive salesmanship will find their markets are expansible," presumably by tapping this fund of savings.

On the other hand, the report points to the large increase of consumer debt in recent years which may slow down further sales. It takes more comfort in the fact that "the bulk of post-war borrowing for the purchase of homes and durable goods has been undertaken by younger family units—those with greater family pressures to buy, lower reserves for financing expenditures, but more favorable income experience and better future prospects. In a period of mild contraction of national income, the employment and incomes of this group are likely to hold up better than the average." In view of the growing trend to establish the order of layoffs by seniority, this may not be as true now as it has been in past recessions.

With respect to government expenditures, the report gives a mixed picture. It states: "A moderate decline in federal expenditures may be expected in 1954. Most of the anticipated reduction will take place in national security expenditures, which reached an annual rate of $51,800,000,000 in 1953, but in addition a slight drop may occur in outlays for nondefense programs. By mid-1954 these changes may bring the annual rate of total federal expenditures for goods and services about $2,000,000,000 below the rate of the end of 1953."

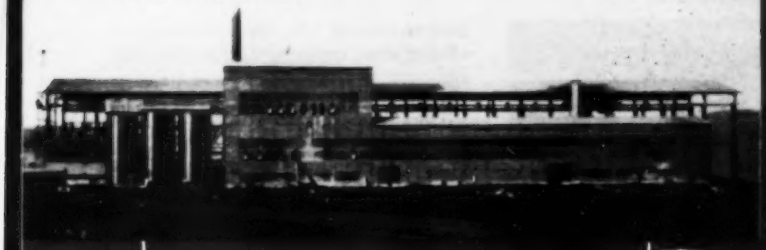
To businessmen who rely for a part of their sales volume on government sales, the report has the following compensating news: "The small prospective decline in federal expenditures will probably be counteracted in large part by a rise in state and local purchases, which in 1953 reached a level of slightly over $2,000,000,000, and there is still an immense backlog of demand. . . ."

It should be of interest to the members of the pit-and-quarry industries, which supply the materials for construction, to learn just where the President and his advisors find this backlog. His report has the following to say on the subject:

"The largest current requirement for predominantly state and local facilities is streets and roads. It has been estimated that an annual expenditure of $3,500,000,000 would be required for ten years to eliminate the existing backlog for federally-aided systems and another $1,000,000,000 to $2,000,000,000 for other roads and streets. In the meantime, many roads now adequate would need to be improved as traffic increases, or rebuilt because of normal wear, adding over $1,500,000,000 of construction annually, while maintenance costs would average another $1,700,000,000. Thus, the total annual expenditure required to provide an adequate road system within a decade is apparently over $8,000,000,000 which compares with a current outlay of about $5,000,000,000.

"The next largest state and local backlog is for schools. It has been estimated that approximately 10,000,000 pupils now have inadequate school facilities, and that the required construction of public and private elementary and secondary schools to erase this need would come to over

(*Continued on page* 129)



A general view of the North Star Cement Ltd. plant at Corner Brook, Newfoundland.

NEWFOUNDLAND'S NEW CEMENT PLANT

Cement pumped 3000 ft. to silos and packing plant at dock . . . . .

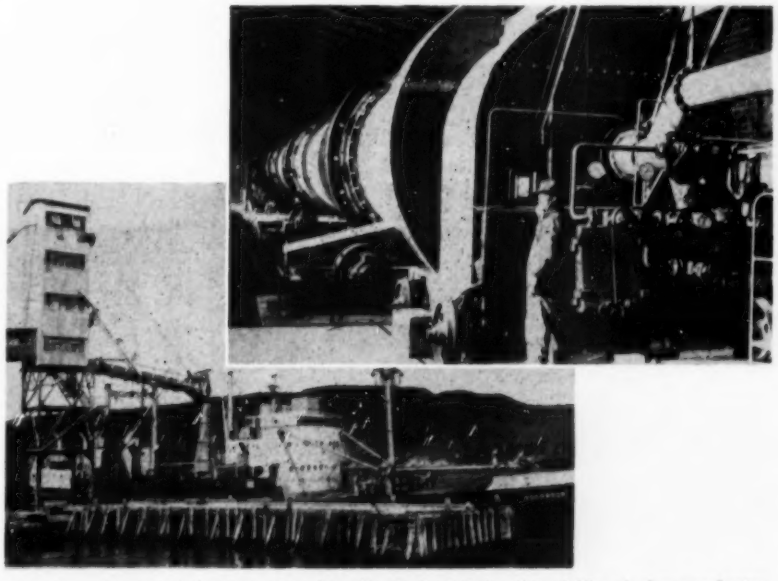
By E. A. LEJA
M.E.I.C., P.E.
Engineer in Charge of Construction

another P&Q exclusive

IN the fall of 1951 Newfoundland saw its first cement plant go into operation. The plant, located along the island's west coast at Corner Brook, was originally developed and financed by the Provincial Government of Newfoundland. Less than one year after its official opening the enterprise as originally planned was turned over to private interests represented by the Company North Star Cement Limited. Having an annual capacity of 600,000 bbl., the Corner Brook operation is now instrumental in alleviating the perennial cement shortage existing in Newfoundland and in the Maritime Provinces of Canada.

This cement plant, which is a wet-process installation, was the first large-scale economic venture launched by Premier J. R. Smallwood within the framework of his drive for the economic development of the province. Preliminary investigations conducted at the Premier's request during the summer of 1950 by the author and Dr. A. A. Valdmanis, Director General of Economic Development, indicated that conditions seemed to justify and encourage the venture. We found large deposits of suitable raw materials in Newfoundland located close to deep navigable water and to the Newfoundland Railway. In addition, there were sufficient supplies of electric power obtainable at reasonable rates, as well as ample labor sources. These factors indicated the technical feasibility of establishing a cement plant in the Corner Brook area.

An investigation of the economic conditions showed that Newfoundland and the eastern provinces of Canada have been handicapped for



Top view: Cement clinker is produced in this 10- by 213-ft. oil-fired kiln. A slurry preheater is used in conjunction with the kiln.

Lower view: A ship loading scene at the Humbermouth dock, showing the firm's unique ship loading device in operation.

A one-cu. yd. diesel shovel loading shale into one of the plant's three tractor-trailers.

years in their construction projects by a persistent shortage of cement. There was no cement plant in the Maritime Provinces, and every year these provinces have been forced to import considerable quantities of cement either from Europe or from the United States. After considering these conditions the Provincial Government of Newfoundland decided to take the initiative and finance the construction of a cement plant in the Corner Brook area, which was to be transferred when completed to private interests for operation.

Project The size of the plant, it was decided, was to be 600,000 bbl. per annum at the first stage. This capacity had been chosen as convenient for the machinery and the smallest size for a commercially successful operation. Provisions were made in the layout for easy extension of the plant to double capacity at a later date, should practical operating experience prove it necessary.

Plans for the development of agriculture and farming in Newfoundland called for a source of supply of agricultural limestone; so it was decided to add to the cement plant a special department for the manufacture of agricultural limestone up to a capacity of 35,000 tons per year.

The method chosen was the wet process. This decision was made despite climatic conditions which would suggest the dry process. The reason for such a decision was that the physical qualities of the raw materials and irregularities in their composition require a thorough and intimate blending for manufacturing a uniform and high-quality cement. This blending is more easily done with the wet process. Thorough B.t.u. cost calculations have revealed Bunker 'C' oil in these particular circumstances to be the best and cheapest fuel.

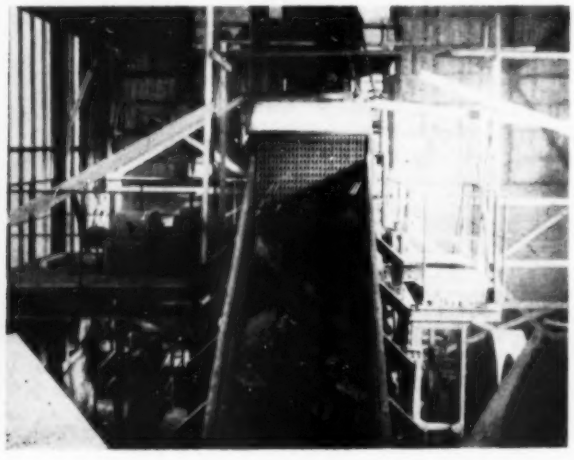
The plant site was chosen in Corner Brook East township on a plateau approximately 320 ft. above sea level, at a distance of 3,500 ft. from the seashore at Humbermouth. The choice of the site was guided by the decision to secure a location: (1) large enough to accommodate the necessary buildings and roads and to permit the future expansion of the plant capacity up to 1,200,000 bbl. per year; (2) as close as possible to the raw material deposits, to the main public roads, to the source of water, and to the source of power; (3) as far as possible out of town, preferably to the east, since the main winds in this country come from the west; (4) as close as possible to the harbor, where the packing plant could be esablished; and (5) in a comparatively flat area with ground of good bearing capacity.

Since it was not possible to find a suitable site at the water-front, it was decided to split the plant into two units, to place the manufacturing departments on the top of the hill and the storage and packing departments at the harbor side at a distance of 3,000 ft. in a straight line from the manufacturing department, and to connect these two units by pipelines for finished cement, agricultural limestone, water and oil, sewers, and a 6-kv. underground electric cable.

As the plant is located in a thickly-populated area, the problem of air pollution was raised, and much attention was given to the solution of dust-removal problems. It is generally known that the loss through dust runs as high as 3 percent, figured on clinker output. It could be expected that the climatic conditions, with low and rapidly alternating temperatures, would frequently cause considerable vapor condensation in the usual dedusting equipment and so jeopardize its efficient operation. Therefore it was decided to install above the kiln inlet end a slurry pre-heater, a "Calcinator", whose function was to reduce the amount of dust and also to effect the use of a considerably

Dumping limestone into the surge hopper in the primary crusher building.

Limestone is delivered to the primary crusher (hammer mill) via a 55-in. by 34-ft. apron conveyor.



shorter kiln. On the other hand, it was expected that in this way the sulphur content in the clinker, originating out of the sulphur content of the fuel, could be reduced.

Construction The supply and installation of the machinery was undertaken by Miag of Brunswick, Germany, while a local contracting firm performed the construction. Construction work commenced in September, 1950, and the plant was officially opened in November, 1951. After trial runs and some adjustments the new plant began commercial operations by shipping cement in May, 1952. Four months later the plant was sold by the government to the owners of the Canadian Machinery and Industry Construction Limited. The cement, which complies with A.S.T.M. and C.S.A. specifications, is sold under the trade mark "North Star".

Raw Materials High-calcium limestone and shales obtained from separate quarries are the main raw materials used in cement manufacturing. The limestone deposit, located ¾ mile from the plant site, contains approximately 15,000,000 tons of suitable limestone (based on extensive core drilling studies). It is believed that further sections of the extensive deposit are suitable for cement production, but these have not been explored as yet. The shale, which is dark gray in color, is quarried ½ mile from the plant site.

The average chemical composition of the limestone and shale is as follows:

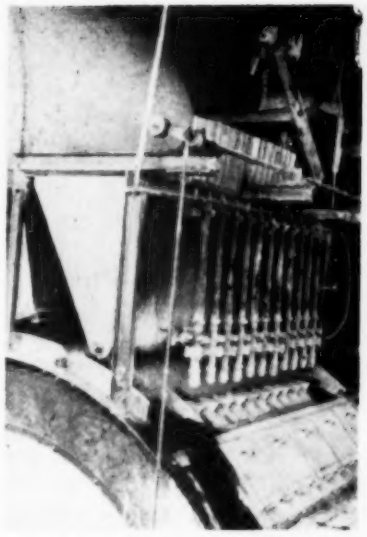
	Limestone	Shale
SiO_2 (insoluble res.)	0.9%	61.8%
Al_2O_3	...	...
Fe_2O_3	...	8.2
R_2O_3	0.3	...
CaO	53.5	0.6
MgO	2.1	2.8
Other ingredients	...	3.9
Loss of ignition	43.7	4.3

Gypsum rock is supplied by the Atlantic Gypsum Ltd. from its quarry at the Canadian National Railroad's station "Gypsum", 67 miles southwest of Corner Brook.

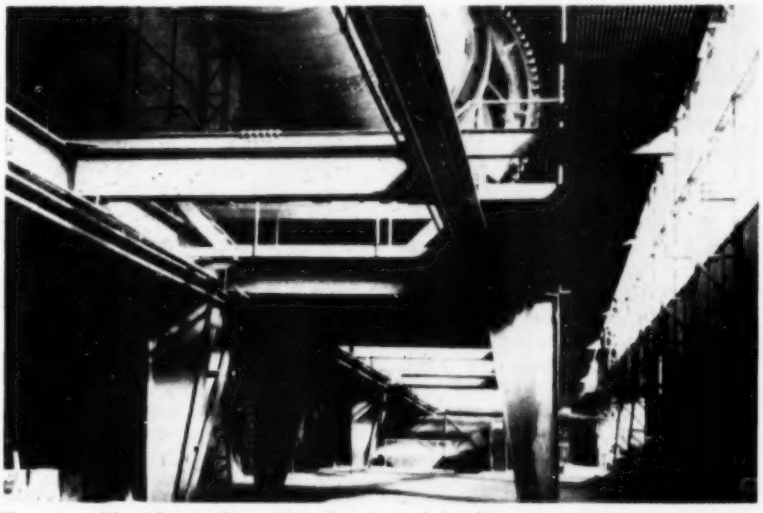
Quarrying Digging in the limestone quarry is handled by a Bucyrus-Erie diesel-powered 1½-cu. yd. shovel; a Caterpillar Traxcavator is used for cleanup around the shovel. Overburden removal and road maintenance are accomplished with a Caterpillar D6 bulldozer. Five Flothmann pneumatic jackhammers are used in secondary drilling; holes average 1¾ in. in size. Compressed air for the jackhammer operation is provided by a diesel-powered Flothmann compressor which has a capacity of 210 c.f.m.

In the shale quarry there is another Flothmann air compressor used for secondary work, and a Weserhuette 1-cu. yd. diesel shovel handles loading. Three hauling units are used to transport the raw materials; these include combination Caterpillar DW10 tractors and Athey side-dump quarry wagons each having a capacity of 11.4 cu. yd.

Crushing At the steel crushing plant building, the raw material is dumped from the Athey wagons into a steel plate hopper of approximately 30 tons' capacity, and is then conveyed by a 55-in. by 34-ft. inclined apron conveyor powered by a 9½-hp., a.-c. motor into a double-shaft Titan hammer crusher. The feed opening of the crusher is 56 in. wide and 70 in. long. The hammer shafts revolve at a speed of 300 r.p.m.; each is equipped with 12



Slurry is preheated in this 13- by 9-ft. calcinator in order to reduce the amount of dust and to effect the use of a shorter kiln; slurry is fed into the unit through the 11 nozzles shown here.



The rotary kiln rides on four pairs of water-cooled rollers on steel construction bases.

Finish grinding is accomplished in this 8- by 46-ft. 3-compartment tube mill, which is driven by a 1250-hp. motor.

The unique North Star plant layout necessitates the use of 3,000-ft. pipelines (illustrated here) to transfer bulk cement and agstone from the manufacturing departments to the dock-site packing plants.

manganese steel hammers weighing 200 lb. each. The crusher is powered by two 160-hp., slip-ring a.-c. motors through V-belts. The crushed material, minus ⅝ in. in size, is then conveyed by an inclined bucket elevator to the covered storage area. The capacity of the crusher measured for limestone is 80 t.p.h. An overhead trolley hoist is installed over the crusher which serves the crushing department for maintenance work.

Storage The raw material is stored in the first part of a 100- by 480-ft. steel storage building 82 ft. high; its walls and roof are covered with corrugated steel sheeting. The building is equipped with a 9-ton traveling bridge crane, having a 3½-cu. yd. bucket and a 50-ft. lifting height. The capacity of the storage hall is approximately 5,000 tons of raw material and 32,000 tons of clinker and gypsum. The unusually large storage building was necessitated by the particular climatic and economic conditions of the province. During the long winter not much construction activity can be performed, but the year-round operation of the plant requires sufficient space in which to accumulate the produced clinker which is ground and shipped in the spring and summer when construction is at its peak.

Grinding Department Adjacent to one side of the storage building is the mill building, which houses both the raw and finishing-grinding departments. This 33- by 110-ft. building, which is 50 ft. high, is of steel construction, with masonry walls and a corrugated steel sheeting roof. The raw material from the storage hall is fed by the traveling bridge crane into two draw-off bins, one of 200-cu. yd. capacity for limestone, the other of 52-ton capacity for shale. Both bins are of steel construction. From the draw-off bins the raw materials are fed into the grinding mill in the required proportions by two automatic Schenck (German) feeding band scales.

The raw mill is a 3-compartment 7¼- by 39-ft. Miag tube mill. It has a charge of 65 tons of grinding media, and its grinding capacity is 28 t.p.h., with less than 5 percent retained on a 170-mesh sieve. The mill is driven at 21½ r.p.m. by a 1,000-ph., 6-kv., a.-c. motor with corresponding condenser and gear and pinion drive, flexible coupling, and speed reducer.

The slurry, having a water content of approximately 32 to 34 percent, is pumped into the storage and blending tanks by two 4-in. centrifugal slurry pumps (one in reserve). An overhead trolley hoist over the mill serves for maintenance work.

Slurry Storage There are three all-steel slurry blending tanks, ft. high and arranged in a row. From these tanks kiln feed material is delivered into two 20-ft.-dia. by 46-ft.-high kiln feed tanks, also arranged in a row. All tanks are equipped with air agitation and air devices. Agitating air is delivered by two Balcke (German) rotary compressors (one of them in reserve); the capacity of each compressor is 300 c.f.m. at a pressure of 60 p.s.i. Two automatic sump level control pumps regulate the flow out from any tank to the two kiln-feeding slurry pumps (one in reserve). Corrected slurry is delivered from the kiln feed tanks by one of the slurry pumps to the kiln feed storage tank (1,750-cu. ft. capacity) located above the calcinator. The overflow returns to the slurry tank by gravity.

Burning The kiln department is housed in the all-steel kiln building, which is close to and parallel with the clinker storage building; it is connected with the grinding department by a tunnel. The clinker is produced in a 10- by 213-ft. Miag rotary kiln combined with a Miag calcinator, and discharged over an inclined grate Fuller air-quenching clinker cooler. The kiln is of uniform diameter, installed with a 3.4 percent slope and driven at a speed of 55 r.p.h. by a 75-hp., variable-speed a.-c. motor. In case of emergency (breakdown of the electric power supply), the rotary kiln can be driven by a "Deutz" gasoline motor through an additional speed reducer and clutch. The kiln is supported by four pairs of water-cooled riding-ring supporting rollers installed on steel construction bases. The discharge end is air-cooled.

The calcinator, which is 13 ft. in diameter and 9 ft. long, contains approximately 3,200 specially-shaped rings. The slurry is fed into the calcinator through 11 feeding nozzles of ½-in. dia. each, arranged in a row and operating automatically at regulated intervals. The calcinator,

A view of the packing plant at Humbermouth, showing the bridged conveyor gallery leading to the 95-ft. tower at the wharf.

which is equipped with a gear speed reducer and pinion drive, is powered by a 26-hp., a.-c. motor and runs at a speed of 1.4 r.p.m.

The kiln is fired by Bunker C fuel oil through a water-cooled burner pipe which has a protective tube of heat-resisting steel alloy. The electrically preheated fuel oil is atomized mechanically by pressure of approximately 500 p.s.i., which is supplied by two fuel oil pumps (one in reserve). The fuel oil is supplied from an overhead fuel storage tank of 11,000-gal. capacity through four 50-kw. electric preheaters and filters. Oil consumption is recorded by an oil meter. The fuel oil feeding installation is equipped with pressure gauges, thermometers, and safety and regulating valves.

Preheated primary air for combustion is supplied from the clinker cooler after passage through a dust-collector; it is circulated by a high-pressure fan, 12 in. w. g. at 6,450 c.f.m. The secondary air is preheated and supplied from the clinker cooler bed through which air is forced at the rate of 29,000 c.f.m. at 5¼ in. w. g. by a Schilde (German) fan.

The Fuller cooler grate is driven by an 11-hp. a.-c. motor through a vari-speed gear reducer. An automatic grate speed control maintains the desired secondary air temperature. The excess cooling air, after its passage through a dust-collector, is exhausted into open air through a 6- by 60-ft. stack. The dust trapped in the collecting chamber is discharged through an automatic tipping dust valve and spout onto the conveyor carrying the cooled clinker to the storage. The clinker conveyor discharges into a clinker crusher, then into a recording clinker scale, and then over a chute into the clinker storage hall.

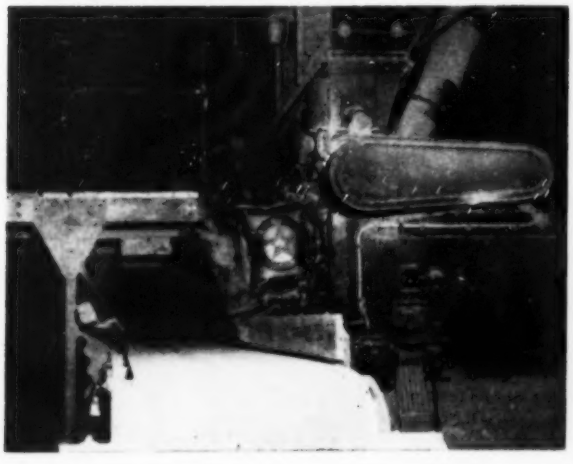
Bulk cement is automatically weighed on these band scales before being chuted to trucks or covered hoppers.

The draft for the rotary kiln is supplied by a fan powered with a 140-hp., vari-speed a.-c. motor through V-belts; it operates at a speed of 1,100 r.p.m. with a capacity of 61,500 c.f.m. at 5 in. w. g. The combustion gases, after passing the calcinator and the battery of eight Buettner multi-cone dust-collectors, are forced into a 6- by 79-ft. exhaust stack. The collected dust is fed back from the multi-cones through discharge valves, screw conveyors, and a bucket elevator into a dust bin above the nodulizing drum. The nodulizing drum, which is 40 in. by 8 ft. in size, is powered by a 7½-hp., a.-c. motor and runs at a speed of 45 r.p.m. The nodulized material is fed back into the kiln by gravity.

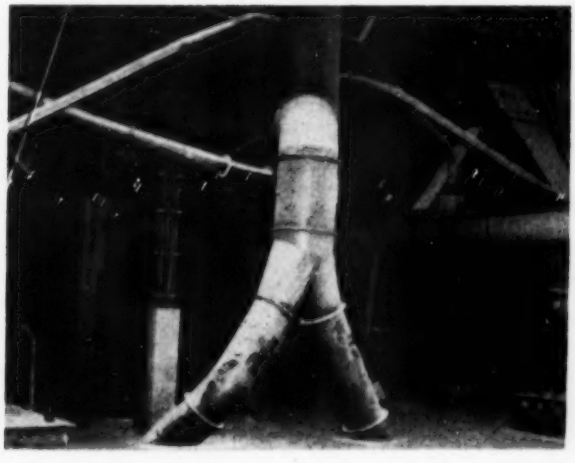
The kiln department control panel (installed by Siemens, Germany) permits the supervision and operating of the burning department from one location in front of the kiln. The extensive instrumentation on the kiln contains the following: measuring and recording apparatus for O_2, CO, CO_2; measuring and recording thermocouples for temperatures at the various important points of the heat economy system; measuring and recording apparatus for draft air pressure, speed, power consumption at various points and fuel consumption; and various trouble indicators.

Cement Grinding Clinker and gypsum from covered storage are fed by the traveling bridge crane into two steel draw-off bins in front of the cement-grinding mill. The gypsum bin has a capacity of 52 cu. yd. and the clinker bin of 200 cu. yd. Both materials are supplied and proportioned into the grinding mill by two automatic band scales. The cement grinding mill is a Miag 8- by 46-ft. 3-compartment tube mill, which is powered by a 1,250-hp., a.-c. motor with corresponding condenser; the mill is operated at a speed of 19 r.p.m. The charge of grinding media is 82

One of the 4-tube automatic bagging machines which handles 1,200 bags per hour.

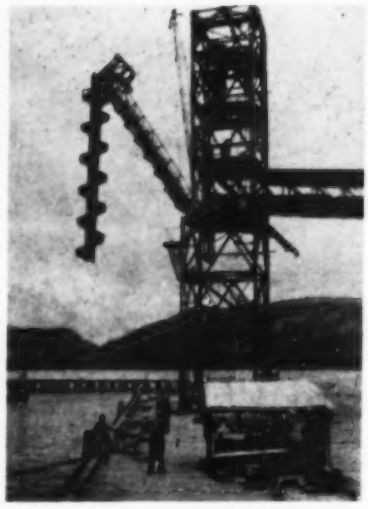


A view of the dedusting equipment at the packing plant.



tons. The grinding capacity of the mill is 25 t.p.h. at a fineness of 1,600 sq. cm. specific surface per gram. The dedusting device consists of a 9-ft.-dia. round filter and a suction fan. The finished product passes a Niagara vibrating screen and is then air conveyed by a 6-in. Fuller-Kinyon pump through a 6½-in. pipeline 3,000 ft. long into the storage silos at Humbermouth. The cement pump is powered by a 163-hp. a.-c. motor. The required air is delivered by a Balcke (German) 2-stage rotary compressor at a rate of 1,580 c.f.m. The compressor is powered by a directly-coupled 305-hp. slip-ring a.-c. motor of 585 r.p.m. The conveying capacity of the equipment is 33 t.p.h. Approximately one-half the length of the unusually long cement conveying pipeline is placed on concrete piers just above the ground, and the other half is on steel supports. The flow of the cement is down-grade with a difference in level of 220 ft. It was anticipated that some trouble would develop in operating this pipeline, but practical experience has proven its operation to be excellent.

Cement Storage, Bagging, and Loading The above-mentioned cement-conveying pipeline discharges cement into any one of the three 35-ft. dia. by 46-ft. high steel cement silos; each has a storage capacity of 10,000 bbl. The silos are arranged in a row and have conical coverings and a gangway on the top. The cement-carrying air passes a round cloth filter 7 ft. in dia. and 11 ft. high and is exhausted by a fan with a suction opening of 22 in. into open air. The silos can each be discharged by three 8-in. by 50-ft. drag-chain conveyors, into a secondary 24-in. by 300-ft. drag-chain conveyor. From there the cement can pass into any one of three vertical 20-in. by 59-ft. bucket elevators. These elevators serve the two bagging machines and one Fuller-Kinyon pump for loading bulk cement into ships and/or for conveying cement from one silo into another.



A construction view of the ship-loading tower and the unique telescope-type spiral chute used to convey bagged cement into the ship's hatch.

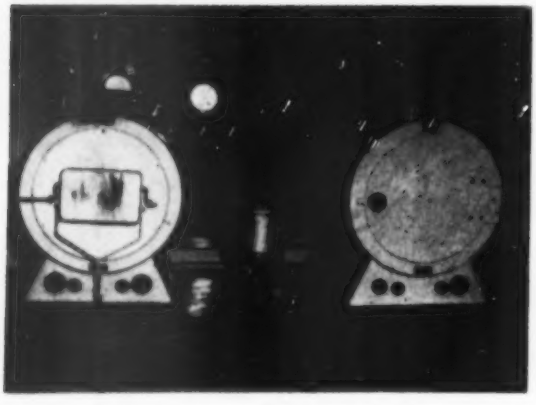
The cement from the two bucket elevators is discharged into two small bins feeding two Niagara vibrating screens. From one screen the cement can be conveyed either into the feeding bin above the bagging machine or into a 12-in. by 33-ft. screw conveyor which in turn delivers the cement through an automatic band scale into railway cars and trucks. The other screen discharges cement into the feeding bin above the second bagging machine. Two Haver and Boecker 4-tube fully automatic bagging machines are used, each packing 1,200 bags per hour. The bagging machines are powered by 21-hp., a.-c. motors. The filled cement bags are then conveyed by two 26-in. rubber belt conveyors to two receiving tables, from which the cement can be delivered either to trucks and railway cars or to the ship-loading device. Cement overflow from the bagging machines is conveyed by two screw conveyors back into the feeding bin above the Fuller-Kinyon pump, from which the cement can be conveyed back into one of the cement silos.

The ship-loading device consists of two 26-in. by 265-ft. belt conveyors installed in a covered steel frame structure bridge which terminates in an all-steel 95-ft. tower at the wharf.

A trough-type belt conveyor bridge 10 ft. wide and 40 ft. long, arranged for lifting and lowering with gangways on each side, carries two belt conveyors located in the bridge. These conveyors terminate in two swinging telescope-type spiral chutes which convey the bagged cement into the ship's hatches. For loading bulk cement into ships the following equipment is provided: A 6-in. Fuller-Kinyon pump driven by a 156-hp., a.-c. motor; a rotary compressor of 2,650 c.f.m. at 35 p.s.i driven by a 156-hp., a.-c. motor, installed at the packing plant; a cyclone and a round cloth filter installed in the highest part of the tower, both discharging the cement over cellular wheels through a 9-in. wide pipe into the boat. The loading capacity of this equipment is 100 t.p.h.

To accommodate ships a wharf 304 ft. long and 16 ft. wide has been constructed of wooden piles. The depth in front of the wharf is 24 ft. at low tide. The average tide is ±2½ ft.

Power Supply Power is supplied *via* a 66-kv. overhead transmission line from Bowater's hydro-electric plant at Deer Lake. The transmission line, which passes within 2,100 ft. of the cement plant, serves an outdoor transformer station which is equipped with a 66/6-kv., 5,000-kv.-a., 3-phase Siemens



Left: The laboratory of the North Star plant is equipped with test kilns.

Right: A view of the agstone plant during construction.

transformer, a Canadian General Electric 69-kv., type KSO outdoor oil circuit breaker, and an outdoor metal-clad, magni-blast 6-kv. circuit breaker. A 6-kv. underground cable connects the transformer station with the powerhouse at the cement plant, where the main distribution panel is installed. Further 6-kv. underground cables connect the powerhouse with the main technical load centers, *i. e.*, raw mill, cement mill, and the following 6-kv./380-v. secondary transformer stations: pump house, packing plant at Humbermouth, oil heaters, and the general power supply for the 380-v. system. Siemens air circuit breakers serve the 6,000-v. system, and a 330-v. system supplies power to eight subordinate distribution panels. An emergency 125-hp., 380-v., a.-c., diesel-electric power plant supplies electric power in cases of emergency to the rotary kiln, the workshop, the machine shop, and some smaller motors and for lighting. This unit is equipped with automatic self-starting relays and a switchboard. The total number of electric motors installed is 190. The main panel has many instruments including measuring and recording apparatus such as voltmeters, ammeters, kv. meters, cos ϕ meters, frequency meters, trouble indicators, etc. The secondary transformer stations have the following capacities: packing plant, 6 kv./380-v., 1600 kv.-a; pumphouse, 6 kv./380 v., 50 kv-a.; oil heaters, 6 kv./380 v., 640 kv-a; and general power supply, 6 kv./380 v., 1,000 kv.-a.

Fuel Bunker C fuel oil is stored at the wharf at Humbermouth in two welded-steel 22,000-bbl. tanks; it is pumped to the cement plant by two oil pumps. The insulated pipeline is 2 in. in dia. and 3,200 ft. long, and discharges into the overhead tank at the burner's stage. The oil tanks are equipped with steam coils and are steam heated. The pumped oil passes three 50-kw. electric preheaters at the oil tanks and enters the pipeline at about 170 deg. F. The oil pipeline is heated when necessary by a 1-in. steam pipeline placed under the oil pipeline and inclosed within the same installation. The steam is supplied by an oil-heated steam boiler located at the burner's stage; it has a heating surface of 120 sq. ft. and a working pressure of 110 p.s.i.

Water Supply The water supply posed a difficult problem, since there were neither sufficient nor reliable sources of water in the vicinity of the plant. It was decided to take the necessary water out of Corner Brook River at a distance of 10,000 ft. from the plant. The pumping station at the river is equipped with two centrifugal pumps each powered by 68-hp. a.-c. motors (one pump in reserve); the capacity of each pump is 110 g.p.m. at 180 p.s.i. pressure. A 4-in. pipeline connects the pumping station with a storage tank at the plant and brings the water up the 300-ft. hill. The 3-compartment concrete underground water tank at the plant has a capacity of 200,000 gal. From the storage tank the water is supplied to the distributing system by a centrifugal pump working at a capacity of 170 g.p.m. The cooling water is recovered in a separate tank of 240-gal. capacity and is used for making slurry. A small household pump delivers the water to the laboratory and the main office.

Machine Shop Since the cement plant at Corner Brook is far removed from industrial centers, it must depend on itself for all maintenance and repair work. Because of this fact, much consideration was given to the equipment of a good and efficient machine-shop. This machine-shop is accommodated in a special 39- by 112-ft. building 32 ft. high. This structure is served with a 5-ton overhead traveling bridge crane. The machine-shop is equipped with an automatic turning and boring machine, precision high-speed lathes, a high-duty, high-speed shaper, a horizontal milling machine, a high-duty, ball-bearing drilling machine, a pneumatic hammer, and the usual workshop equipment such as electric and acetylene welding machines, various hoists, forges, etc.

Agstone Department

North Star also operates an agstone plant at the Corner Brook site. The raw material is obtained from another part of the limestone quarry where the strata, because of their high magnesia content, are not suitable for cement production, but are excellent for use as agstone.

After preliminary crushing in the Titan hammermill, the material is pulverized to the desired fineness in two impact mills, each having 24- by 31-in. intake openings. Following air separation the rejects are recircuited, while the fines are pumped from a storage bin by a Fuller-Kinyon pump through a 6-in. pipeline 3000 ft. long to docksite loading facilities. The finished product is bagged or shipped in bulk *via* truck, railroad, and boat. Various stations of the agstone-loading equipment are dedusted through a bag-type collector.

General manager of North Star Cement Ltd. is Dr. E. Roethe, whose headquarters are in Montreal. A. M. Reibling is plant manager, and K. Jericho, is plant superintendent. Both of these men have had extensive experience in the European cement industry.

Kaiser Gypsum's Output O.K. Despite Loss of Ore Ship

Kaiser Gypsum Company's production will not be affected as a result of the loss in service of its ore ship, the *S. S. Harry Lundeberg,* which grounded off the tip of Lower California on February 8, General Sales Manager Colin Campbell announced.

Arrangements were made immediately after the accident for the delivery of gypsum rock from other available sources to keep Kaiser Gypsum's Long Beach and Redwood City (Calif.) plants at capacity production until shipments are resumed from the company's San Marcos Island deposit.

Ideal Cement Studies Plans For Three $1,000,000 Plants

Plans for the construction of three plants, each to cost about $1,000,000, for the production of light concrete aggregate are being considered by the Ideal Cement Company.

Cris Dobbins, president, who made the announcement, said the plants probably would be constructed late this year near Denver, Salt Lake City, and either Omaha or Lincoln.

He stated that Ideal recently had conducted experiments with materials found along the front range "hogback" extending from Wyoming into New Mexico.

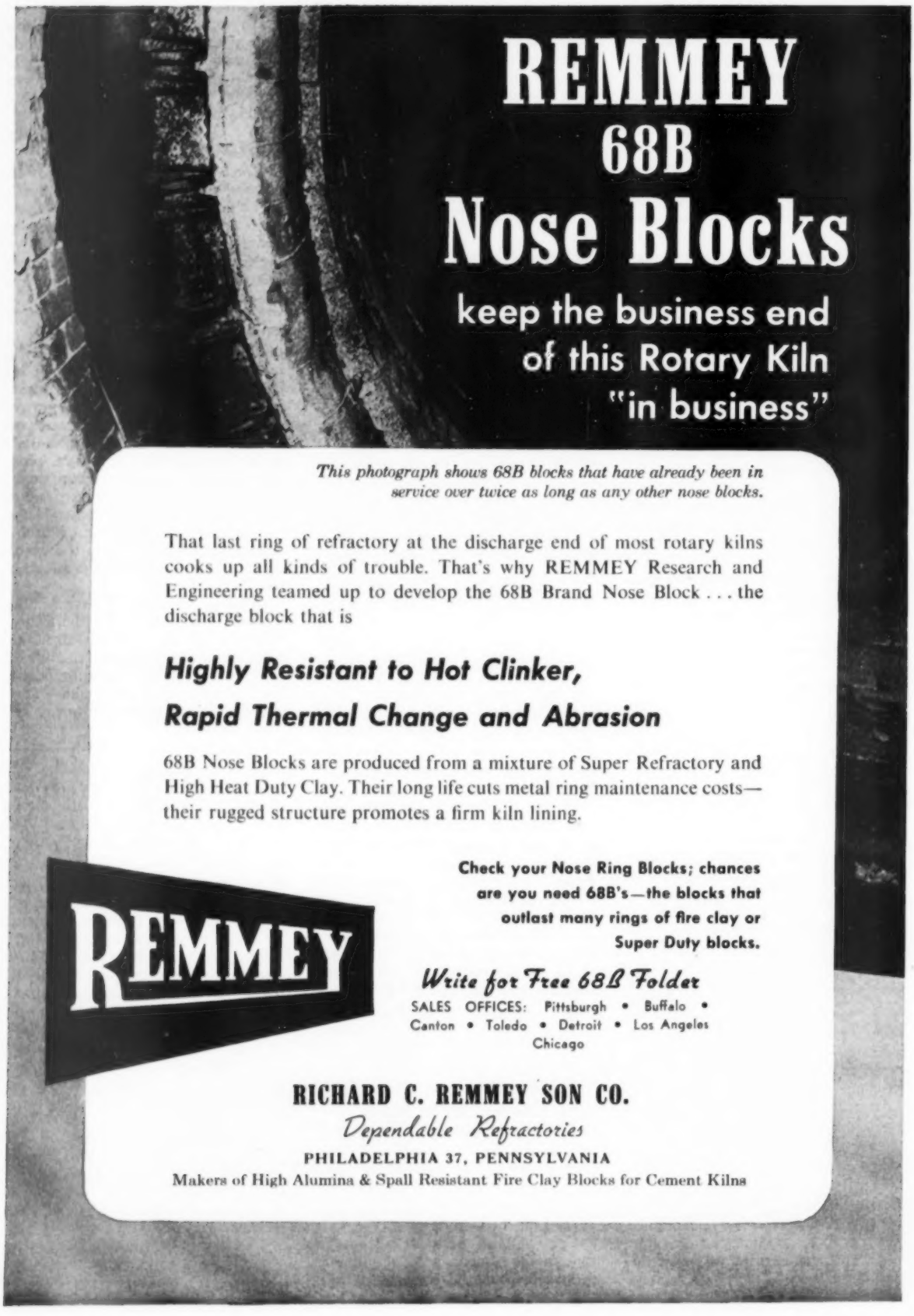
Western Gypsum Products Acquired by British Concern

The sale of Western Gypsum Products Limited, Winnipeg, Man., to British Plaster Board Limited of London was announced by J. E. Spear, president and general manager of the Winnipeg firm. The sale price was $3,000,000.

Western Gypsum has plaster mills and wallboard plants in Winnipeg and Calgary, and its main mine is at Amaranth, Man., 120 miles northwest of Winnipeg.

Mr. Spear stated that the deal was closed after visits to the firm's properties by W. Stuart Tremble and R. S. Jukes of London. There will be no change in policy, management, or directorate.

The British company is the largest manufacturer of gypsum products in the United Kingdom. It has plants in Ireland, South Africa, and France.



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New Kansas Plant Designed to Meet Stricter Fine Sand Specifications

another ON THE SPOT report

THE Kaw River, which flows eastward through Kansas to join the Missouri River at Kansas City, has been for many years an important source of aggregates, particularly sand, for eastern Kansas and the Kansas City area. On it are

By WALTER E. TRAUFFER

located many sand and gravel operations, most of them small, and most of them using suction dredges. These produce chiefly sand as there is little gravel in the river deposits, and much of this sand is used with the crushed stone produced in the Kansas City area. One of the newest and most efficient of these plants is that of the American Sand and Material Company, which is located at Turner, Kans., on the south side of the river, 15 miles west of its junction with the Missouri River. This setup consists of a suction dredge and a new shore plant with a capacity of 1,500 tons per day, 25 percent more than that of the plant it replaced. This output is attained with an operating crew of only six men.

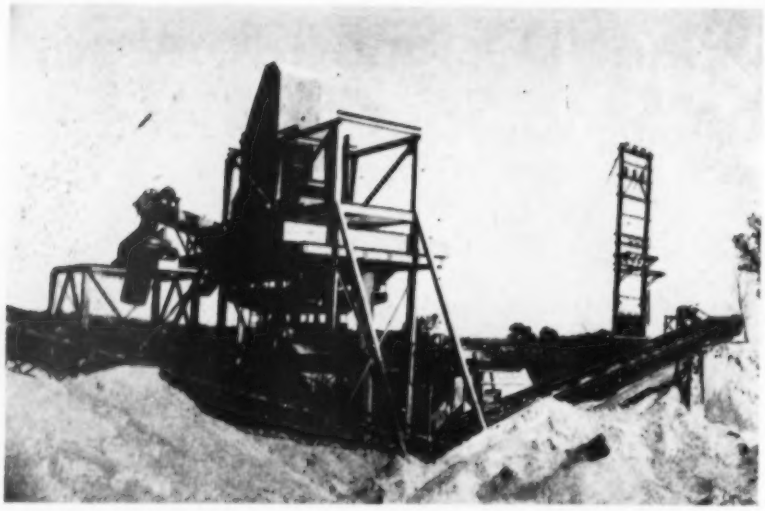
The owner and operator of this company, James E. Siler, is typical of the progressive producers who are the backbone of the aggregates industries and of American industry in general. According to Mr. Siler, 1953 was the best year in the company's history, and prospects for 1954 are equally good. The record 1953 output of over 250,000 tons, as compared to 175,000 tons in 1952, was made despite the loss of considerable business during the summer because of a general truck drivers' strike. Mr. Siler expects business during the first half of 1954 to be very good due to a continued high volume of residential and heavy construction. While no plans have been made for further expansion of plant capacity this year, Mr. Siler is ready to keep in step with any increase in demand. Assisting his father in this business is a son, Herbert L. Siler, who recently was made business manager of the company. W. W. Siler is plant superintendent.

The river dredge of the American Sand and Material Company, Turner, Kans., with the cutting ladder and intake nozzle raised.

A plant view showing the dredge line and the box from which the material flows through the grizzly to the vibrating screen.

Mr. Siler's association with the business dates back to the birth of the company, which was established in 1923 as the American Sand Company, operating a river dredge on which all processing was done. He was superintendent for this company for 20 years. During this period a shore plant was established, and various expansions and improvements were made. In September, 1944, when Mr. Siler bought out the original owners, the capacity was 750 tons daily. The first major improvement made under his ownership was the installation of a cutting ladder in 1946 which considerably increased the output of the dredge, so that the maximum 950-ton capacity of the plant could be realized.

The increasing demand still could not be met. After the record flood of 1951 had damaged the plant and equipment, and because a change of location was made necessary by a railroad relocation, it was decided to build a completely new plant of greater capacity which could use the full output of the dredge, and which could readily be enlarged when necessary. A plant was designed to fit these conditions by the Eagle Iron Works, which also supplied much of the equipment. It went into operation in October, 1952, and has readily produced its designed capacity of 1,500 tons daily. This plant also makes it possible to meet all federal and state highway specifications, which the old plant could not do. These specifications have become increasingly stringent, especially with respect to extreme fines for concrete

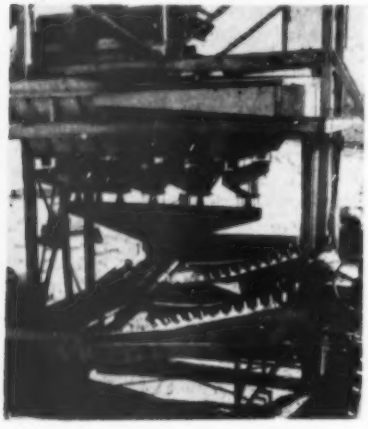


In the foreground are the two sand stockpiling conveyors. At the left are the screw washer and the screen which makes three sizes of gravel.

mixes. These requirements can now be met at Mr. Siler's plant without the use of admixtures. Six different grades of sand and three grades of gravel can be produced with only changes in screen cloth. Three grades of sand and three gravels can be made at one time.

This operation is located on the Kaw River in a section where sand dredges abound; four others are visible from this point. Most of these and others are downstream closer to the Missouri, and there are few in the other direction except at Lawrence and Topeka—respectively 25 and 50 miles upstream. It is found necessary to dredge only a short distance up and downstream from the plant during a given season; and each spring the floods replace the material removed. The normal flood stage is 30 to 35 ft., and the normal low during the summer is 8 to 9 ft.

A closeup view showing the main screen, the sand settling tank, the launders, and the two 24-ft. sand screw washers.



In 1951, however, the flood stage went over 50 ft., and the water was 20 ft. deep at the old plant site, which is not far from the present one. In this flood some of the old plant bins and a portion of the stockpiled material was lost. Electrical equipment had to be dried out, and operations were shut down for six weeks.

The dredge has a steel pontoon barge on which all equipment is mounted and enclosed in a structural steel and corrugated metal housing. It is anchored to each bank with steel cables secured to the trunks of trees above the normal water level. The river at this point is normally about 450 ft. wide. A Lidgerwood 3-drum hoist on the dredge handles the two shore lines and the dredge ladder. With this arrangement the dredge can be moved back and forth across the river and up and down as desired. The maximum range used is 600 ft. For this reason the dredge line needs only flexible hose couplings at each end. The pipe used is ordinary rolled steel in 20-ft. sections having flanged connections. It is supported on steel barrel pontoons.

A 50-ft. Diamond dredging ladder is supported from a steel A-frame on the dredge. This keeps a steady flow of material to the suction nozzle and the Morris heavy-duty dredge pump, which has 8-in. suction and discharge. All other equipment on the dredge is electrically driven.

The shore line to which the dredge line is connected is inclined up a steep bank and discharges at the top of the plant into a baffle box, from which it flows through a 4 in. bar grizzly. Here large trash and oversize is removed to a waste pile. The material through the grizzly drops with the water on a 4 by 12 ft. Cedarapids 2-deck vibrating screen having ¾ in. wire cloth on the top deck, and ⅛ to ¼ in. on the bottom deck, depending on the type of material in demand. The small amount of plus ¾ in. gravel off the top deck is wasted to the same pile as the grizzly rejects.

The minus ¾-in. gravel retained on the bottom deck of the screen goes to a 24-in. by 15-ft. Eagle screw washer, and from this point by gravity to a 2- by 6-ft. Cedarapids 2-deck screen. This procedure makes three grades of gravel—usually ⅛- to ¼-in., ¼- to ⅜-in., and ⅜- to ¾-in. These sizes are now discharged to piles from which they are loaded out direct or rehandled to stockpiles by cranes. Three 15-ton steel bins on hand are to be installed this winter for these materials.

Sand passing through the bottom deck of the first (4- by 12-ft.) screen drops into two 20-ft. Eagle Iron Works double water scalping tanks each 8 ft. wide at the top and 6 ft. deep. Each tank has six compartments, and the six grades of sand from them are discharged through cross launders into a collecting launder. The six sizes produced are discharged from this launder in any desired combinations to make two sizes of sand. Each of these sizes is fed to one of a pair of 57-in. by 25-ft. long-weir fine material screw washers. Individual 24-in. belt conveyors discharge the two sands to stockpiles. These conveyors are now 60 ft. long but will be extended 500 ft. to give greater storage capacity.

Storing and rehandling is being done with two diesel crawler cranes —an American with a ¾-cu. yd. bucket and a Caterpillar engine, and a Byers with a ¾-cu. yd. bucket and a Buda engine. Both Owen and Erie buckets are used. There is also a Hough 1-cu. yd. high loader

(*Continued on page* 113)

The 8-in. heavy-duty dredge pump, with the V-belt drive, the motor, and the controller in the background.

Simple and Flexible Field Conveyor System Supplies Large Michigan Gravel Plant

FIFTEEN hundred acres of glacial sand and gravel deposits to develop — deposits so rich that even the overburden could be used as road gravel — but located 16 miles from the screening plant with no transportation but barges. That was the situation facing the Construction Aggregates Company of Grand Haven, Mich.

The solution to their problem came through a new concept of flexibility in a heavy-duty, high-capacity belt conveyor installation, a system so flexible that 100-ft. field conveyors can be relocated economically just to permit a shorter dragline swing in loading them.

About 16 miles up the Bass River from their main processing and screening plant at Ferrysburg, Construction Aggregates Co. has some 1,500 acres of gravel deposits under development. Glacier-borne in origin, the deposits are covered by from 6 to 8 ft. of overburden — clay mixed with a heavy percentage of sand and gravel. The deposits themselves range in depth to 30 ft.

The only feasible means of transportation between pit and plant requires the use of barges, which are coupled in twos and pushed down river from the pit to the plant. Therefore, in addition to a field conveyor system at the pit, it was necessary to provide adequate barge loading facilities as well.

This is where the flow starts at the new Construction Aggregates installation near Ferrysburg, Mich. The dragline charges the loading hopper which feeds the first of the three 100-ft. field conveyors. The third of these conveyors discharges at an intermediate point on the 500-ft. gathering belt.

Both the problems of a flexible field gathering system and barge loading have been solved with the conveyor installation. In addition, complete facilities for the future development of the entire 1,500-acre area are found in the existing equipment.

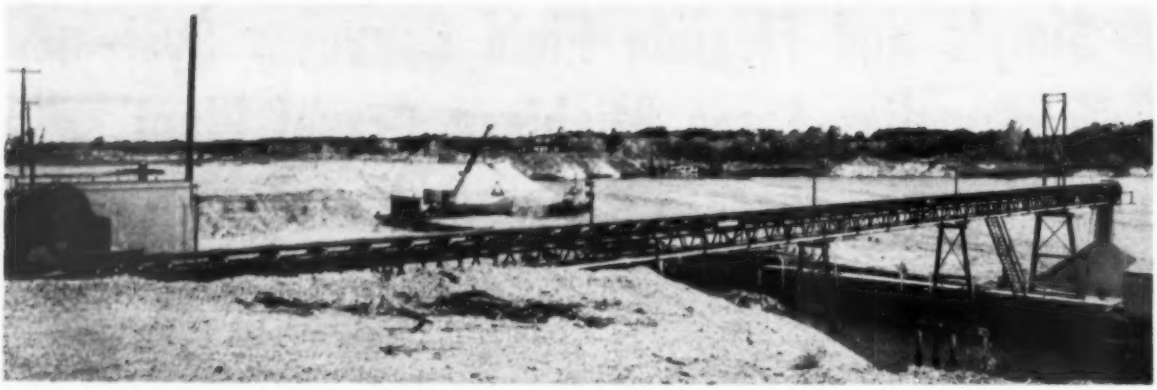
This system has been in operation since August, 1953.

After the overburden has been stripped, the dragline — a Manitowoc Speedcrane with a 3-cu. yd. Paige bucket — excavates the aggregate, depositing it into a hopper positioned over the tail end of the first field conveyor. All of the three 30-in. by 100-ft. Barber-Greene field belt conveyors are used in series. Each is supported on the ground by structural framework at the head and tail ends and at an intermediate point. These frames incline each conveyor upward, giving it a discharge height of 6 ft. All three are strung out from the gathering belt to the dragline, each discharging onto the next, with the third emptying onto the 30-in. by 500-ft. Barber-Greene gathering conveyor. The present point of discharge is at about the halfway point in the 500-ft. length.

Positioned at right angles to the field conveyor system, the gathering conveyor carries the excavated material to the 30-in. by 200-ft. Barber-Greene barge-loading belt. Each of the two barges hauled on each trip carry between 1,000 and 1,200 tons, depending upon the depth of the channel at the time. Two tugs handle eight barges in the river transport phase of the operations.

The gathering belt is located adjacent to the huge pile of overburden. This material, although containing clay, is also sufficiently rich in usable aggregates to make it salable as road gravel; therefore, a

An unusual horizontal gravity takeup is used on the 500-ft. gathering belt. It provides proper belt tension even though the conveyor is operating at ground level, without room for the conventional vertical gravity takeup.



This is the end of the flow. The discharge point of the 500-ft. gathering belt is at the extreme left. The material is discharged onto the 200-ft. barge-loading belt, the discharge end of which is supported on the piling at the right. One of the 1,000-ton plus barge loads and the tug are visible at the center, to the rear of the conveyor.

loading hopper is positioned at the tail end of this 500-ft. conveyor. By moving the dragline over to this pile, it takes only a few minutes to switch from loading the regular gravel to the road gravel.

A well-thought-out plant design has provided flexibility for the present operations and all future ones as well, without adding additional equipment.

All conveyors are constructed on Barber-Greene's 42-in. deep standardized truss frame. Each field conveyor is equipped with two heavy-duty lifting bails. When it is desirable to move one of the units, the drag bucket is detached and cable slings are installed on the crane. The hopper is lifted out of the way, the conveyor is hoisted and moved, and the hopper is replaced. The entire operation seldom takes more than 30 to 45 minutes. In fact, the procedure is handled with so little loss of time, that the conveyor nearest to the dragline is often shifted simply to permit operating the dragline with the minimum swing.

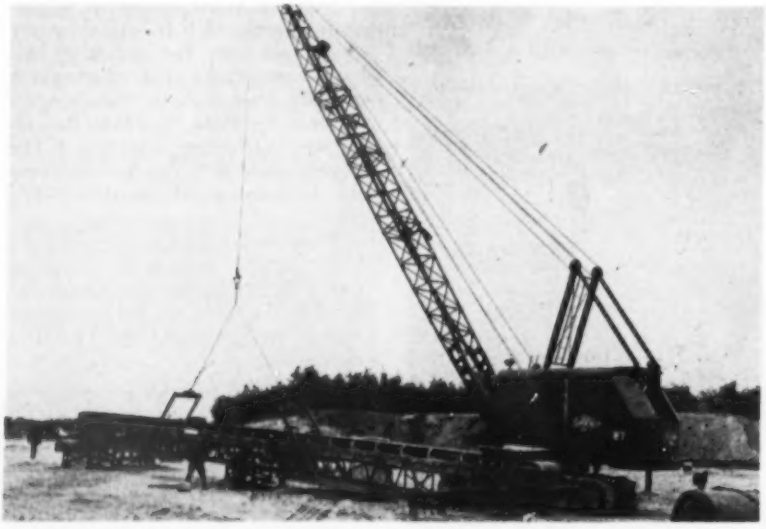
Although flexibility and portability are not always associated with conveyors as large as the 500-ft. gathering belt, both features have been designed into the unit. It will eventually be a 1,000-ft. unit; and all of the components necessary to effect the extension are on hand, assembled into standardized sections of convenient length for handling. Each section is completely assembled with carriers, return rolls, decking, joint frames, etc. The 5-hp. electric drive on the gathering conveyor is sufficient for the entire 1,000 ft.

Despite the fact that the 200-ft. barge-loading belt is supported by heavy structural steel towers as it extends out over the water of the bay, it, too, has been designed in such a manner as to permit its removal and repositioning with the minimum of assembly.

These are the plans for future operations. The dragline and the three field conveyors will move down the length of the present gathering belt, working out the deposits along its entire length. The component sections previously described will then be added to make this unit 1,000 ft. long. The dragline and the field conveyor will continue to work out additional deposits to the termination of the 1,000 ft.

Then operations will begin on the opposite side of the gathering belt and will be carried out much in the manner in which they are now con-

(*Continued on page* 113)



A change in position is made. The dragline bucket has been removed and the cable slings have been substituted. The loading hopper has been swung out of the way. With the slings attached to the special lifting bails, the field conveyor is being relocated. Note the supports at the head and tail ends and at an intermediate point which support the conveyor at a predetermined angle, permitting its discharge onto the next belt.

Ed Kainz (left) of Miller Equipment Co., Grand Rapids, who is credited with the engineering design of the new Construction Aggregates installation, and Charles Hammond, construction superintendent (right), who is in charge of the pit installation.

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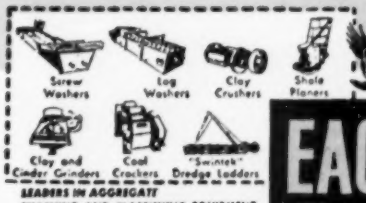

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Tells Score on Recovery with Slackline

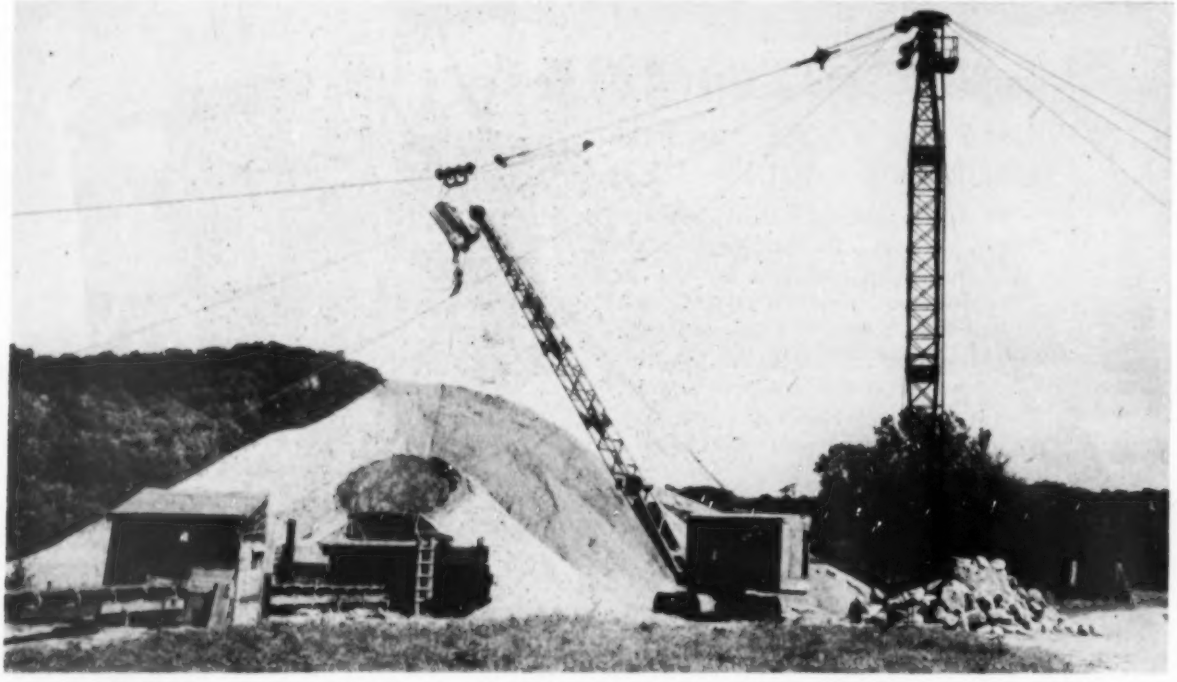
By WILLIAM M. AVERY

ON THE SPOT

ON a recent field trip through Minnesota this publication's editorial representative received what amounted to an intensive short course of instruction in the mechanics and economics of slackline recovery from a river deposit. Since the instruction was received from an outfit that has been in the game for over 30 years, the information could be fairly described as having come straight from the horse's mouth.

The Guaranteed Gravel & Sand Co. has used slacklines for almost 33 years in its operations on the Blue Earth River at Mankato, Minn. Within recent years the scene of its activities was moved about a mile up river, and at that time the existing 1-cu. yd. Sauerman slackline installation was replaced by a 2-cu. yd. outfit supplied by the same manufacturer.

The slackline is operated in conjunction with field conveyors, and to save wear and tear on the latter units the material is dewatered in a large surge pile before it is fed to the conveyor system. The company also believes that in this type of operation it is better to drop materials onto a self-cushioning surge pile than to attempt direct feeding into a hopper, which would have to absorb tremendous impact. The surge pile also has the inherent advantage of making it possible to operate the plant for fairly long periods when the river end of the operation is shut down.



The slackline mast at the Guaranteed Gravel and Sand Company's operations on the Blue Earth River near Mankato, Minn., dominates the countryside. The initial section of the field conveyor system is at the left, while the hoist house is just visible at the right.

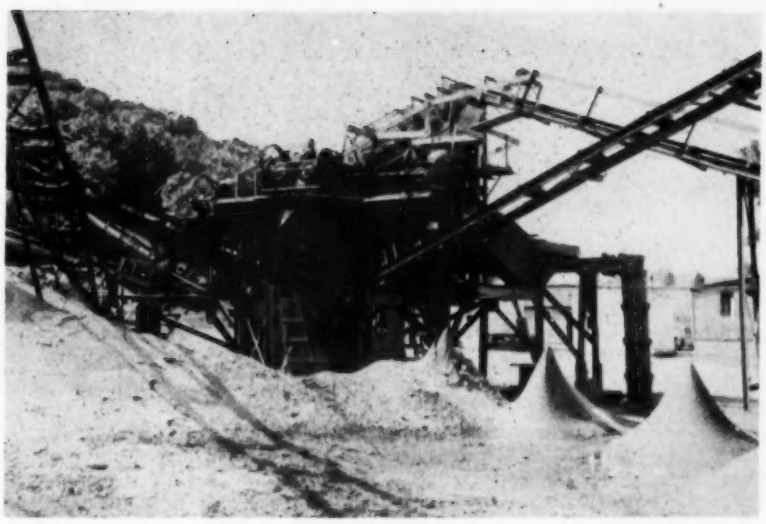
The material in the deposit ranges from 25 to 60 ft. in depth and lies above a distinct ledge of limestone. It is quite hard and varies from approximately 10 percent to the maximum of 35 or 40 percent coarse. The slackline mast has a height of 80 ft., but it rests on ground far enough above the river to bring the effective height above water level to approximately 95 ft.

Guaranteed's management believes that a slackline has impressive advantages in an operation of this kind. It is faster than other types of equipment, especially where the in-haul is long and the material lies below water. With a maximum in-haul of 700 ft. and an average of 250 to 300 ft., Guaranteed is well able to capitalize on the additional speed. Flexibility is good, since a shift can be made in about an hour if the material suddenly falls off, and it is possible to recover from greater depths than would be the case with either a scraper or a clamshell. The slackline also lends itself quite readily to stockpiling, due to the height from which the material can be discharged; and it can be operated during periods of high water, which would enforce a shutdown of other types of equipment.

The company has worked out an interesting technique for moving the mast in an upright position, rather than lowering it, which is the more usual practice. This not only effects a considerable saving of time in completing the maneuver and getting back into production, but materially reduces the danger of buckling the mast.

This is how it works. The mast is set up on an 8- by 8-ft. by 12-in.

A reciprocating feeder below the field hopper controls the rate at which run-of-the-deposit material is placed on the first unit of the field conveyor system.



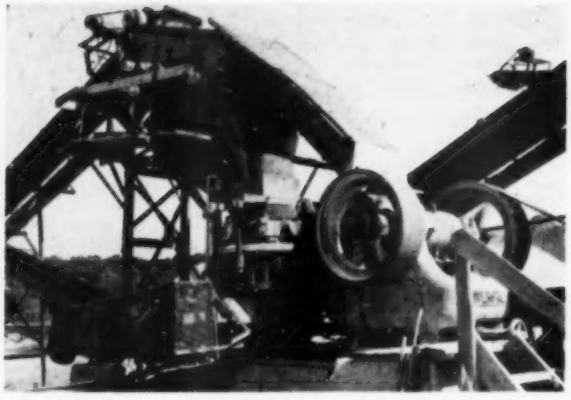
The final sizing and washing operation pictured here involves a 4- by 10-ft. vibrating screen and three screw washers. Finished materials discharge onto stockpiling conveyors.

Here's an Idea . . . .

The Guaranteed Gravel & Sand Co., whose operations at Mankato, Minn., are described in the adjoining columns, believes in making it as easy as possible for visitors and customers to find its plant. Among the aids to good navigation are large signs on the main highway as well as on a lateral approach road, and finally one opposite the plant roadway itself.

Lettering on all three of the signs is done in luminous paint, so they may also serve the secondary purpose of night-time advertisements. Noteworthy in the accompanying pictures is the firm's impartial attitude toward such competitive beverages as Coca-Cola, 7 Up, coffee and root beer, and an equal lack of concern over the priority of gravel or sand in the rendition of the company name. With or without such embellishments, we believe highway signs are a sound investment.

A transfer point in the field conveyor system. Note the precast concrete slabs which support the conveyor sections.



This photo shows the 4- by 8-ft. screen which splits the flow between a 24-in. jaw crusher (right) and a 2-ft. short head cone crusher.

thick precast reinforced concrete slab. The slab has a cast-in-place steel loop which makes it possible to hook onto it with a bulldozer. Using the guy cables as a means of steadying the mast, and timbers to cushion the movement of the slab over the ground, the whole structure is towed to its new location in a series of step-like maneuvers which permit the mast to lean first one way and then the other. The company reports that this method of shifting to a new location is faster and requires considerably less power than lowering the mast, moving it, and then re-erecting it. For obvious reasons this maneuver is generally carried out when the ground is frozen.

Material is reclaimed from the surge pile with an American crane mounting a 60-ft. boom and a 1½-cu. yd. clamshell bucket. The crane is used to transfer run-of-the-deposit sand and gravel to a 15-cu. yd. steel hopper, from which a Universal reciprocating feeder places the material on the first section of the field conveyor system. The hopper has cables permanently attached to facilitate moving, and is covered by a grizzly which has 12-in. openings.

The operation of the field conveyors (company officials call them their silent servants) is virtually a story in itself. The conveyors are built in the company's own shop in 10-ft. long sections, this length having been found most convenient to handle. The sections are bolted together in the field and are set up on 18- by 18- by 4-in. precast concrete slabs. The system consists of a relatively fixed section about 300 ft. in length adjacent to the plant. This portion is neither moved nor lengthened unless the crushing and screening plant itself is shifted. The remainder is fully portable and incorporates a sufficient number of 10-ft. sections to connect the fixed portion and the field hopper.

As the mast is shifted to place the slackline in a new section of the deposit, the variable-length portion of the conveyor is extended the required distance. This operation involves moving the mast to the new location, tearing down the hopper-feeder assembly and resetting it, and placing the necessary number of conveyor inserts. The total elapesd time for such a move is about a day and a half.

When the total length of the field conveyor system reaches about 700 ft., it is the practice to move the plant approximately 1,400 ft. along the river bank in the direction in which digging operations are proceeding. With the plant and the 700 ft. of field conveyor re-established in the new location, subsequent relocations of the slackline mast gradually reduce the distance between the surge pile and the plant proper. Thus, in this phase of the operation, the field conveyor inserts are gradually removed until the surge pile and the plant are side by side, and then gradually reinstalled until the mast is again approximately 700 ft. from the plant.

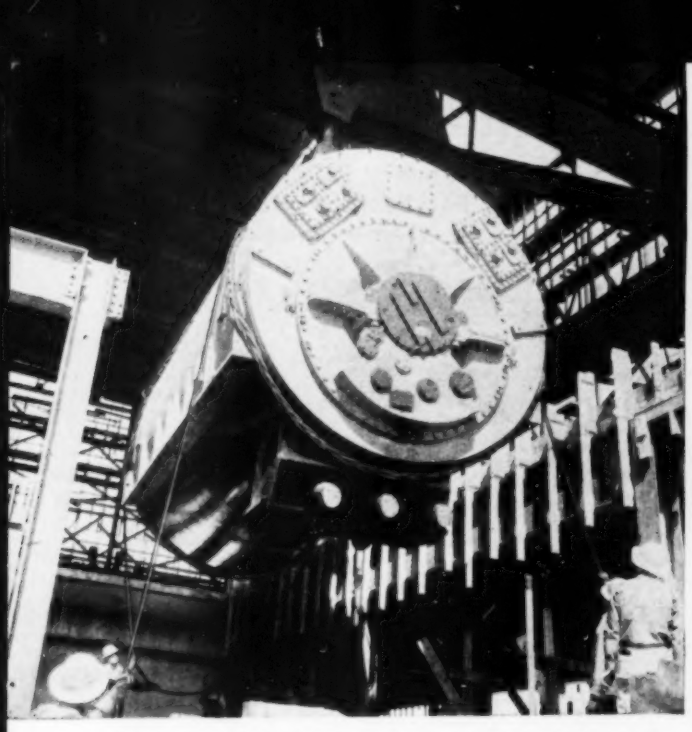
The 700-ft. limit on total length of field conveyor is largely a matter of economics. Up to this limit the cost sheet favors inserting additional 10-ft. lengths of conveyor; beyond 700 ft. it appears to be cheaper to relocate the plant and start over. Guaranteed's management believes that the cost of building and operating the field conveyors runs only a fraction of a cent per cubic yard of material handled. The frames are virtually indestructible, and with reasonable care the life of the 20-in. wide 5-ply belts runs from six to eight years. The 300-ft. fixed section of the conveyor is driven by a 10-hp. motor, while the variable section which comprises the remainder of the run is driven by a 15-hp. motor.

The capacity of the crushing, screening, and washing plant ranges from 120 to 140 t.p.h. of finished material, and the normal work day is 10 hr. The system of field conveyors places the material on an inclined belt which discharges on a 4- by 8-ft. double-deck Tyler screen. Oversize, consisting of plus 2-in. and plus 1-in., drops by gravity into a 24-in. Universal jaw crusher, which serves as a primary, and a 2-ft. short head Symons cone crusher.

While the product of both crushers is returned to the original feed conveyor, the throughs from the initial screen are conveyed to a separate screening station surmounted by a 4- by 10-ft. double-deck Tyler screen on which the products are thoroughly washed. Various sizes of sand and pea gravel are recovered in three separate Eagle washers, and these materials plus coarse gravel are delivered into stockpiles by means of five separate product conveyors. The materials are transferred from the various stockpiles to truck loading hoppers by a ¾-cu. yd. American crane equipped with a clamshell bucket.

Guaranteed uses purchased power only for lighting and for operating fractional-horsepower motors. Power for 18 drive motors ranging from 3 to 30 hp. is produced with a 130-kw. Cummins "L" diesel engine and generator. The Sauerman hoist, which operates the slackline, is driven by a six-cylinder General Motors diesel engine.

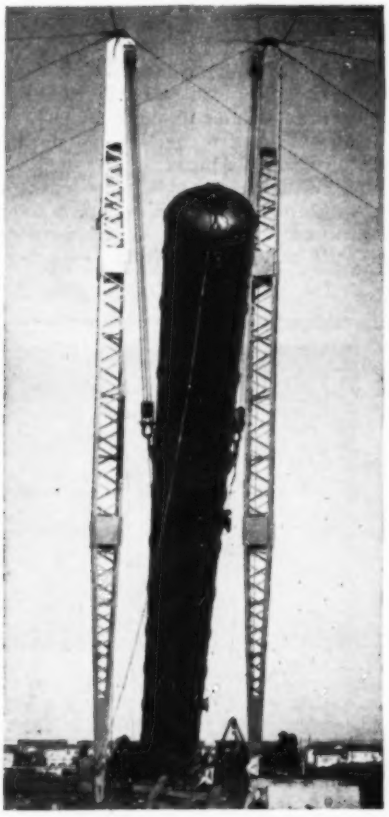
Five men are employed in direct production work at Guaranteed's Mankato plant. At Wells, Minn., some 40 miles southeast of Mankato, a subsidiary operation produces ready-mixed concrete and farm drain tile. Frank Balcerzak is manager and secretary-treasurer of the concern, and Wilbur R. Miller is office manager.



Multiple-part Red-Strand Slings are always trusted to handle heavy loads. They are easy to apply to both the load and the crane hook. User tests in Detroit proved Red-Strand slings withstood unusual abuse, yet maintained higher-than-rated strength.

A Gary plant uses Red-Strand single-part slings for many lifting jobs like this. These slings are available with various combinations of end fittings for attaching the sling to rings or lugs. Single-part slings frequently are the most economical to use.

How to Select the Correct Sling for Your Job



A heavy cylindrical load like this usually calls for the use of multiple-part Red-Strand Flat-Laced slings. They are strong, flexible and do not slip or abrade on smooth round surfaces.

Start your sling selection by analyzing five factors:

1. The load—its size, weight, shape, finish.
2. Working area, amount of head room.
3. Size and type of crane hook.
4. Angle of sling legs.
5. Location and type of lugs or rings, if any.

This is basic information. From it, your supplier can recommend the sling by type, size and length that is safest, longest lasting and most economical for your job.

Types of Slings

Multiple-part slings are always recommended for heavy duty service, because for equal strength they are far more flexible than single-part slings. They hug the shape of the load easily, present a greater bearing surface to the load, and reduce the possibility of marring finely finished surfaces.

Where these factors are not so important, either Red-Strand ***single-part slings*** or ***grommet slings*** may be used for economy. Single-part Red-Strand slings are often recommended for lifting lighter weight objects, or those that have fixed attaching rings or lugs. Grommet, or continuous strand Red-Strand slings are ideal for forming hitches of various types without fittings.

How to Gain Extra Savings

Re-useable Pin-Lock thimbles reduce sling costs by 21%

Two suggestions will help you save money on slings.

The first is to re-use Pin-Lock thimbles on multiple part slings. They increase sling life by protecting loops from abuse or damage. Besides, these exclusive Leschen Pin-Lock thimbles cut sling costs on an average of 21% because they may be used again and again. They lock into sling loops with pins instead of permanent clamps, permitting re-use, and eliminating constant expense of thimble replacements.

The second suggestion is to use Red-Strand slings—for a very simple but good reason: Red-Strand slings are made of ***higher-than-rated*** quality Leschen wire rope that delivers ***longer-than-expected*** service.

Get a copy of Leschen's *Sling Handbook* for complete information. Ask your Leschen man for one, or write.

LESCHEN WIRE ROPE DIVISION
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri

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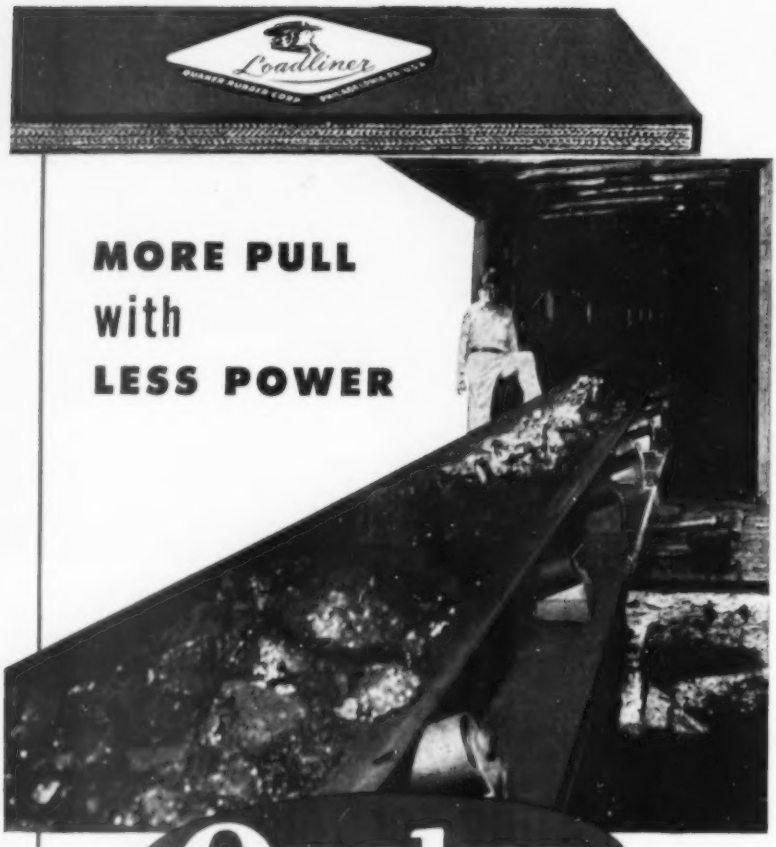
HERCULES Red-Strand
WIRE ROPE



Quaker

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CONVEYOR BELT

Hauling heavy loads with less power is no problem for the Loadliner. Sturdy rayon carcass makes it lighter and thinner than ordinary cotton-carcass belts of equal strength. Highly flexible for good troughability in all weather. Abrasion and mildew resistant. Exceptional fastener—holding strength. Skim coat between plies. Ideal for use on operations calling for long conveyor distances. Available in any length with any number of plies. Widths up to 72". For lower cost per unit carried, use the Loadliner—another Quaker quality product for stand-up endurance.

Write for free folder and name of nearest distributor.

Belting, Hose, Packing and Moulded Rubber of every construction for every need.

QUAKER RUBBER CORPORATION
DIVISION OF H. K. PORTER COMPANY, INC.
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January Building Total For Eastern States Sets New January Record

January's total of building and engineering contracts awarded in the 37 Eastern states reached an all-time high for any year's opening month, according to F. W. Dodge Corporation. The Dodge Report's contract total for the month was $1,151,987,000, a 7 percent increase over the figure for January, 1953, and 28 percent more than the figure for January, 1952.

January, 1954 awards for nonresidential building amounted to $473,077,000, a 16 percent increase over the corresponding month of last year; residential awards at $462,482,000 were 1 percent ahead of January, 1953; heavy engineering contracts (public works and utilities) at $216,428,000 were 4 percent higher than in January of last year.

Commenting on the January record, Thomas S. Holden, vice-Chairman of F. W. Dodge Corp., stated:

"This gratifying record for January's forward commitments for new construction activity will . . . surprise those people who have been expecting a marked decline in building and engineering activity this year. Added to the carryover from the large contract volume of last year's fourth quarter, January's contract volume promises a very high rate of construction activity during the current quarter.

"This year the January seasonal drop from December's contract total was only 11 percent, compared with a 27 percent drop from December, 1952, to January, 1953.

● Arthur H. O'Connor, sales manager and assistant secretary of Material Service Corporation, on February 1 became the youngest employee of the company and possibly the youngest in the country to be enrolled in the Quarter Century Club. Mr. O'Connor worked in the accounting, purchasing, order board, pricing, and sales departments and assumed his present position six years ago. Colonel Henry Crown, chairman of the board, presented him with an engraved watch to mark the anniversary at a luncheon given in his honor.

General view of the new 180 t.p.h. crushed stone plant of Deerfield Rock Corp., near Fort Lauderdale, Fla. Primary crusher is at the left, washing and screening plant in the center, and sand stockpiling conveyors at the right.

Deerfield Rock Corporation Erects $500,000 Crushed Stone Plant

THE Deerfield Rock Corporation, a newly-formed affiliate of R. H. Wright and Son, Inc., Fort Lauderdale, Fla., recently placed in operation a new and modern $500,000 crushed stone plant at nearby Deerfield Beach. The firm bought out the former Deerfield Quarries, Inc., about a year ago. Shortly thereafter the old Deerfield stone plant was abandoned and completely new equipment was installed at the quarry site.

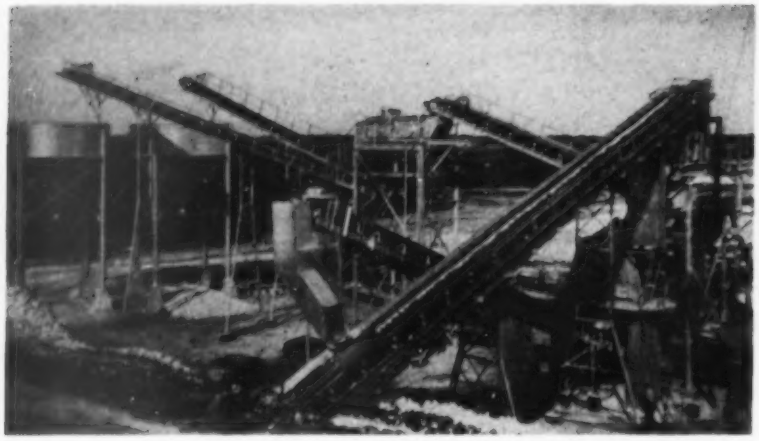
The plant, a stationary open-air installation, was designed and engineered by the Iowa Manufacturing Company. The basic equipment includes a primary jaw crusher, a secondary double-impeller impact breaker, two triple-deck screens, and eight channel frame belt conveyors, all of Cedarapids make, as well as a Syntron vibrating grizzly and three Eagle Iron Works twin screw classifiers. Producing at a rate of 180 t.p.h., which slightly exceeds the original plant design, the compact plant supplies washed ¾-in. rock, pea rock, minus 3/16-in. concrete sand, and mason sand to the booming construction industry of southeastern Florida. Shipments are both by truck and rail.

Located on Junction 7 and Power Line Road just west of Deerfield Beach (about 12 miles north of Fort Lauderdale), the operation covers 600 acres, partially leased and the remainder owned by the corporation. The quarry is developed in a coral limestone deposit of Quaternary age, recovery being by a Manitowoc 2½-cu. yd. dragline. The use of a dragline rather than a shovel for digging is necessitated by the high water table (approximately 3 ft. below the ground surface). The one-quarter mile haul to the stone plant is handled by both Euclid end-dump and bottom-dump trucks. Loads are discharged *via* a drive-over ramp into a 12- by 12-ft. charging hopper mounted over a Cedarapids 40-in. by 10-ft. reciprocating feeder.

The stone then passes over a Syntron twin F-66DT vibrating grizzly, which measures 46 in. wide by 36 in. long with a bar spacing of 4½ in. Oversize is fed into the primary crusher — a Cedarapids 3240 jaw crusher — while the throughs are discharged onto the under-crusher conveyor. This use of a jaw crusher is one of the principal operating features of the plant, since it is one of the few primary jaw crushers being used in the entire state of Florida. The unit was specially designed in order to overcome a crusher compaction problem inherent to Florida's generally soft and wet limestone deposits.

Material from the crusher is carried on a 36-in. by 110-ft. belt conveyor to the Cedarapids 4- by 12-ft. triple-deck horizontal vibrating screen, which is fitted with water

Another overall view of the Deerfield Rock plant, showing (left to right) the sand stockpiling conveyors, the primary screen, the secondary screen, and the stone bins. The ramp (background) serves the primary crushing station.



This closeup view shows the compactness of the Deerfield stone plant. On the right are the primary screen and the secondary crusher, the latter closed-circuited to the screen. The finishing screen is in the center background, with conveyors leading to the stone bins.

The primary crusher is a 32- by 40-in. jaw crusher; it is one of the few jaw crushers being used in Florida.

spray-bars. Under the present operation, only two decks are being utilized; one deck has 1-in. cloth and the other 3/16-in. Oversize from the top deck is chuted directly to the secondary crusher — a Cedarapids 3042 double-impeller impact breaker (type CR-3), which is operated in closed circuit with the primary screen. By means of the impact breaker, a minimum of elongated particles is produced, thereby enabling the finished product to meet rigid specifications. Stone from the secondary crushing unit is recircuited by means of a 30-in. by 60-ft. belt conveyor which feeds the delivery conveyor from the jaw crusher.

Material of the bottom deck of the primary screen (1-in. to 3/16-in.) is delivered *via* a 30-in. by 35-ft. belt conveyor to the second Cedarapids 4- by 12-ft. triple-deck washing screen. As in the other vibrating screen, only two decks (9/16-in. and 3/16-in. cloth) are being utilized at present to produce ¾-in. and pea rock. Each product is conveyed on a separate 24-in. by 70-ft. belt conveyor to a 200-ton steel storage bin. These bins are mounted over-track, and are used for both rail and truck loading; they have a 15-ft. clearance under the gates.

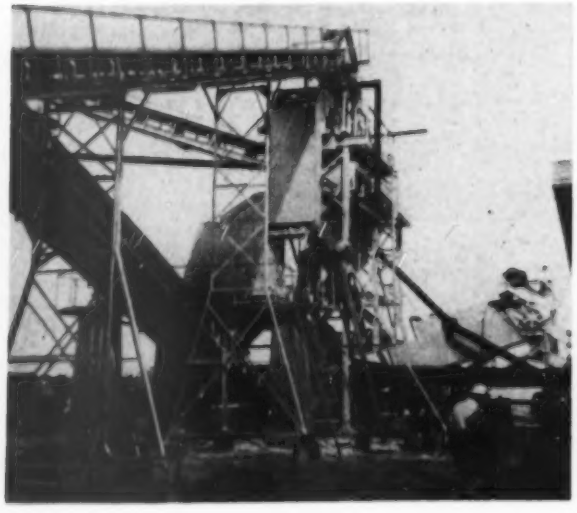
Minus 3/16-in. material from the primary screen (and also wash water from the finish screen) is discharged into an Eagle Iron Works 10- by 24-ft. scalping tank equipped with a triple-cell blending flume which serves to remove excess water but to retain the fines. The fine particles then discharge into three Eagle Iron Works 36-in. dia. by 25-ft. screw classifiers, two of which produce concrete sand and the other mason sand. The classifiers have a tub width of 84-in. and require 700 to 900 g.p.m.; they are the largest made by Eagle Iron Works. Each classifier in turn feeds a 24-in. by 130-ft. stockpiling belt conveyor. The two conveyors that handle concrete sand parallel each other and discharge to a single stockpile; they are aligned 30 degrees apart from the third conveyor. These conveyors feature a cable-type suspension design. (See photo.)

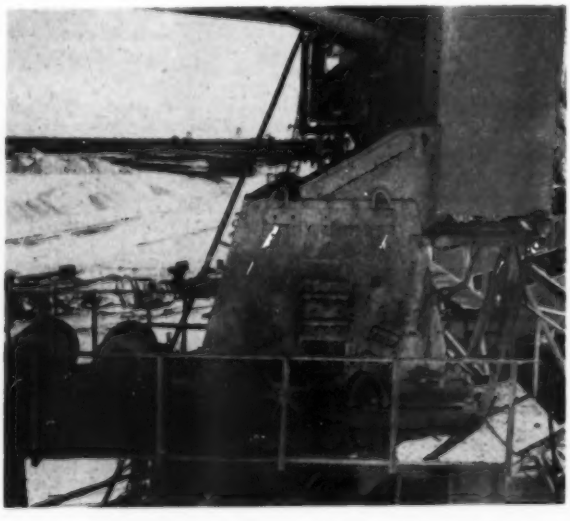
The well-designed, compact Deerfield stone plant is completely electrified. All equipment operates on 220-v. and is push button-controlled from a central panel board.

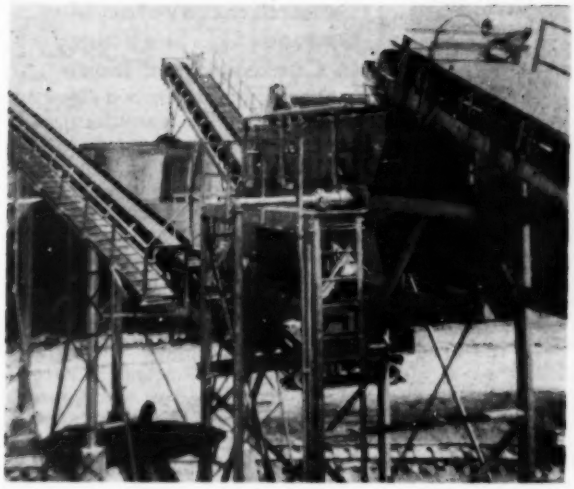
Mobile equipment at the plant includes a P & H 1-cu. yd. dragline used occasionally for quarry loading

A view of the secondary crusher, the primary screen, and the 3-ft. dia. by 25-ft. screw classifiers.

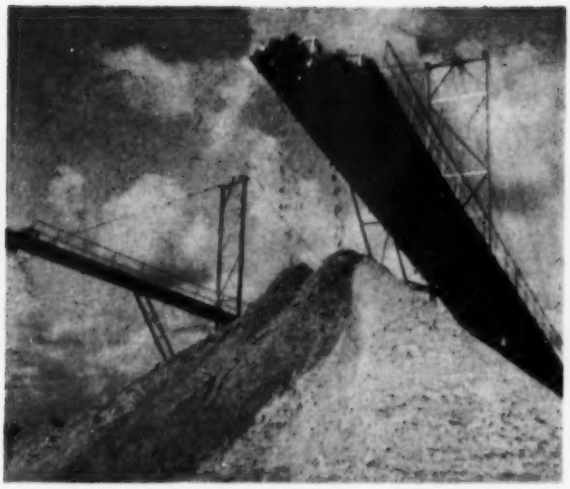
A 30- by 42-in. double-impeller impact breaker is used for secondary crushing; the unit is closed-circuited to the primary screen. On the right is one of the screw classifiers.







A closeup of the 4- by 12-ft. horizontal vibrating screen used to produce ¾-in. rock and pea rock; the screen is equipped for washing.



Two 24-in. cable-suspended belt conveyors are used to stockpile minus 3/16-in. concrete sand, and a third is used for mason sand.

and other purposes, a Link Belt-Speeder ¾-cu. yd. clamshell used for loading from stockpile, and two bulldozers (one International TD-18 and one Allis-Chalmers HD-20). A Mixermobile front-end loader is also used for loading from stockpile. Movement of rail cars in the yard is facilitated by a Whiting Trackmobile, which can move three loaded or six empty rail cars; the firm also operates its own gasoline-powered switch engine.

Deerfield Rock Corporation is headed by Byron F. Snyder, president; Wyatt D. Hodges, vice-president; and L. E. Davis, treasurer. These men are also associated with R. H. Wright and Son, Inc., and other local construction firms. S. A. Dukes is the general manager. About 20 men are employed at Deerfield.

The plant primarily serves Fort Lauderdale and North Broward County, although rail shipments are made to Lake Okeechobee communities and as far north as Cocoa. Rail shipments are *via* the Seaboard Air Line R.R.; the quarry is connected to the main line by a 2-mi. spur constructed by the firm.

New Kansas Plant

(*From page* 100)

equipped with a bulldozer which is used for loading, rehandling, and general cleanup work. Additional water for the plant is obtained from a small pump on a river barge.

About half the output of the plant is shipped by rail within a radius of 120 miles. A 2,200-ft. company-owned railway siding connects to the main line of the Santa Fe Railway. Relocation of this line has just been completed, raising it 18 ft. to above flood level. Most of the truck deliveries are to the Kansas City area. The bulk of the output in recent years has been sold to ready-mixed concrete and concrete block producers and for concrete construction, airports, etc. The company also retails a complete line of hard building materials from a yard a mile east of the plant. This retail base is located in an industrial area known as the Turner Industrial District, where the Santa Fe Railway is encouraging the building of heavy industrial plants. The building material is stocked for the convenience of builders and contractors, who can now obtain virtually e v e r y t h i n g needed for any type of building, with the single exception of lumber. Both aggregates and building materials are distributed in the firm's four 10-ton trucks, as well as in hired trucks.

The classifiers and washers in this plant were supplied by the Eagle Iron Works, the screens by the Iowa Manufacturing Company, and the belt conveyors and their framework by the Pioneer Engineering Works.

Field Conveyor System

(*From page* 102)

ducted; that is, the dragline and field conveyors will work from the shore, back inland to the full 1,000-ft. length of the gathering belt.

When this has been accomplished, the gathering belt will be unbolted into manageable lengths and will be re-assembled in a position virtually at right angles to its present location. It will extend downstream and will discharge onto the barge-loading belt, at right angles. The barge-loading dock will remain in its present position.

The dragline and the field conveyors will then work out the area lying inland from the gathering conveyor until this whole area has been exploited.

Thereupon the complete barge-loading dock and the 200-ft. conveyor will be shifted downstream to a completely new location about at the end of the area most recently worked out. The gathering conveyor will be moved and again will be positioned on the same axis as the barge-loading belt. Field conveyors and the dragline will repeat their operations in a manner almost identical with their present operations.

In operation, only four men, including the dragline operator, are needed at the plant.

Design, operation, and layout of the pit installation was supervised by Charles Hammond, construction superintendent; the Barber-Greene conveyor engineering was handled by Edward Kainz of Miller Equipment Company in Grand Rapids, assisted by members of Barber-Greene's engineer section.

The complete plant operations are under the supervision of the following: V. A. Brink, vice-president in charge of Ferrysburg operations; Edward Dull, plant manager; John Vandermolen, plant superintendent; and William Nauta, chief engineer.

Maurice H. Basquin, who was production manager for the United States Gypsum Company, Chicago, died recently in a hospital in Evanston, Ill.

AMPLIFIED Ability

IN A...

● 13 TON OWEN

The stresses and strains to which especially large machines are subjected are more than proportionally greater than machines of conventional size. Proper designing challenges the knowledge and skill of the engineer.

An interesting example of skillful designing and sound construction is this 5 Cu. Yd. Owen Bucket built to handle dredging of large blasted rock.

In general design and principle of operation it is typically Owen. But it has two main shafts to cover an unusually large area when open, teeth almost as large as a man and increased power sufficient to fully utilize its tremendous capacity.

If you have an uncommon need you can depend upon Owen to build a special bucket that will render the same satisfactory service you have long enjoyed from standard Owen Buckets.

A MOUTHFUL AT EVERY BITE

THE OWEN BUCKET CO.

6050 Breakwater Ave., Cleveland 2, Ohio

BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO, BERKELEY, CALIFORNIA, FT. LAUDERDALE, FLORIDA

General Excavator Made Osgood Co. Subsidiary In Consolidation Move

Officials of the Osgood Company of Marion, Ohio, manufacturer of power cranes and excavators, announce that, effective January 4, 1954, the third step in a corporate reorganization program started three years ago will be accomplished by its purchase of all the capital stock of The General Excavator Co., Marion, Ohio. This move toward consolidation began in October, 1950, by combining The Osgood Company and The General Excavator Co. sales divisions for marketing their products under the name Osgood-General.

During 1952 the second step took place with unification of field-service operations, again under the name Osgood-General, although separate service headquarters were maintained in Marion. Corporate structure of The Osgood Company now includes as wholly-owned subsidiaries both the Commercial Steel Casting Co. and The General Excavator Co.

Edgar W. Barnhart, formerly vice-president and general manager of The General Excavator Co., has been elected vice-president and secretary of The Osgood Company, whose other officers are: Robert C. Owens, president; Ben T. Wiant, vice-president and treasurer; and John F. Lacey, vice-president for foundry operations.

This reorganization will not affect the sales and service policies or functions of Osgood-General.

The Osgood Company, originally founded by J. C. Osgood in 1852, was reorganized in 1928. At that time the Commercial Steel Casting Co. became a subsidiary of The Osgood Company. The General Excavator Co. was originally incorporated in 1926 and started operations by purchasing the Fairbanks Steam Shovel Company plant at Marion.

Oregon A.I.M.E. Section Host To Metals-Minerals Meeting

The Oregon section of the American Institute of Mining and Metallurgical Engineers will be host to the A.I.M.E. Pacific Northwest Metals and Minerals Confereace, which will be held in Portland April 29 through May 1.

According to F. X. Cappa, conference chairman, the three-day technical program, which will be open to the public, will include two sessions on industrial minerals, one on engineering geology, one on ground water, and one on mineral industries education.

Testing and Locating Faults In Portable Power Cables With High Voltage D.C.

By ROY A. NELSON
Test Engineer
Simplex Wire & Cable Co., Chicago

another P&Q exclusive

HIGH-VOLTAGE D.C. can be used advantageously to check the electrical condition of the insulation and locate faults in all types of mining cables. D.C. has the ability to search out weaknesses in the cable insulation, and yet not destroy faults that may be present. By periodic, systematic d.c. testing, the relative health of the electrical system can be determined and signs of weakness can be picked up before a serious and costly outage occurs. Furthermore, with the same equipment—with slight modifications—faults can be located without damaging the faults beyond repair.

With the increasing use of ground current limiting devices providing for the safety of personnel, there is an equal need for a quick, accurate, and simple method for detecting and locating faults in portable shovel-cables. When current limiting reactors are used, the resulting damage to a faulted cable is slight, thereby making the faults unrecognizable by outward appearances. Therefore, a proven method that will locate a fault quickly and is non-destructive to the cable is described.

For voltages in excess of 2,000, the SH-D type cable is the most common, because it offers the greatest protection to personnel and cable. The construction of this cable is shown on this page; it consists of a copper braid over each insulated conductor, ground wires in the interstices, and a tough Tirex jacket overall.

There are two general types of faults found in open-pit mining SH-D shovel-cables, i.e., an open circuit and a short circuit. In practice, an open circuit is not too prominent; and when it does occur, it is usually accompanied by a weakness in the insulation at the point of discontinuity. Therefore, ground faults are the most common and are caused by physical injury to the cable in the mine or quarry.

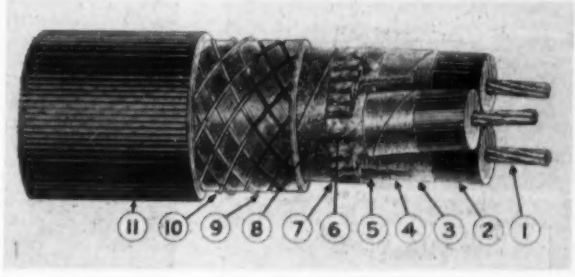
Ground faults may be classified into two groups, (a) high resistance and (b) dead short. The high resistance fault is the most common and easiest to locate. This type of fault is between the copper conductor and the copper shielding braid and will vary in resistance, depending upon the nature of the defect. The dead short, or water fault, is not as common and is more difficult to locate. This fault is where the copper conductor is in contact with the braid and has negligible resistance.

Direct current is used because the testing apparatus can be economically manufactured which is light in weight, durable, and portable; in addition it will use very little energy from the line. Figure 1 shows a schematic diagram of a d.c. test unit with an output of 30,000 volts d.c.—40 milliamperes, which is suitable for testing cables through 7,500 volts.

D.C. Testing Operation The recommended procedure is to test the cable first by applying the voltage slowly to one conductor of the cable, grounding the other phases—shield and ground wire—to equipment and system ground. Because of the relatively small capacity of the d.c. test unit, it is necessary to keep the initial charging current small. When the cable under test is fully charged, the current flow is the true leakage current which is registered on the

Construction details of the SH-D shovel cable. One bare ground wire of suitable size may be used in the center of Type SH-D cables in direct contact with the conductor shields instead of, or in addition to, the three braided ground wires shown.

1. Power conductor
2. Rubber insulation
3. Tape
4. Ground conductor
5. Braid
6. Copper braid
7. Jute filling
8. Tape
9. Inner jacket
10. Seine twine reinforcement
11. Outer jacket



Shielded cables of the type shown above are used on power shovels in large quarrying operations. An unlocated fault in a cable can be costly by causing shovel "down time".

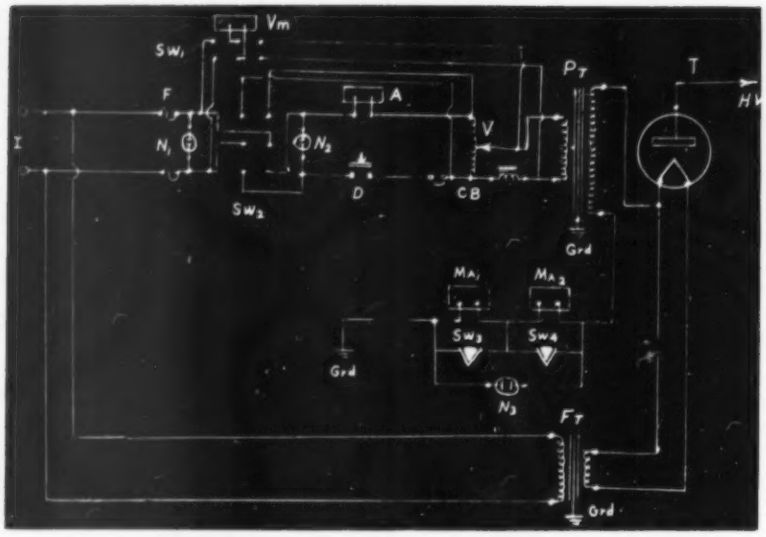
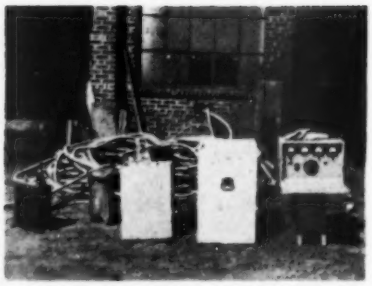


Fig. 1 — Schematic diagram of the 30,000-v. d.c. test unit.

I—	Input: 115 v. 15 amp. 60 cycles
F—	Fuses: 5 amp. a.c.
N_1, N_2, N_3	NE-48 neon indicating lights
CB—	Instantaneous circuit breaker: 1 amp.
SW_1, SW_2	Double pole double throw switches: 10 amp. 125 v. a.c.
Vm—	A.c. voltmeter: 0-150 v. a.c.
A—	A.c. ammeter: 0-10 amp. a.c.
D—	Foot switch: 10 amp. 110 v. a.c.
V—	V-10M Variac: 10 amp. 115 v. a.c.
PT—	Plate transformer: 115/20,000 v. 40 m.a. a.c.-output (min.)
FT—	Filament transformer: 115/5 v. 10.5 amp. a.c. insulated for 60,000 v. d.c.
T—	Half wave rectifier vacuum tube: 60,000 v. inverse peak 40 m.a. d.c. output (min.) 5 v. filament
MA_1—	D.c. milliammeter: 0-1 milliamperes d.c.
MA_2—	D.c. milliammeter: 0-50 milliamperes d.c.
SW_3, SW_4	Meter switches: push to open
Grd—	Ground
HV—	Negative polarity high voltage d.c.—leads to cable under test or to fault—locating equipment.

milliammeter. The voltage is held for five minutes and the leakage current read at intervals to give a polarization curve as shown in Figure 2. The shape of the curve can be used to determine the electrical condition of the cable under test and to expose any potential weakness in the insulation. Further, by periodic d.c. testing, the relative condition of the insulation of each phase can be obtained. It is the combination of applying high voltage and reading the leakage current that gives a true picture of the electrical condition of the cable. Tests may not only include the cable, but the splices, terminations, oil switches, current transformers and insulators as well. Test voltages for new cables are tabulated in the I.P.C.E.A. specifications for rubber and varnished cambric insulation. However, this voltage may be varied according to the age of the cable, clearance on the ends, and the apparatus connected to the cable. Further, test voltage can be modified with experience and rigidity of requirements.

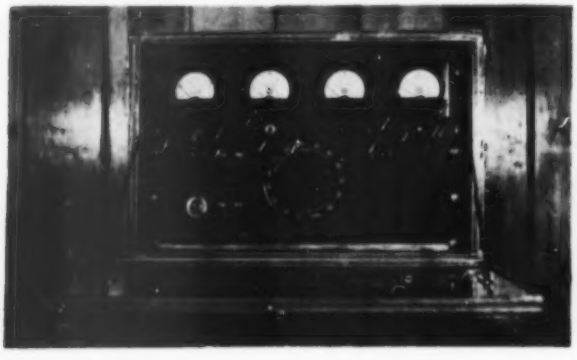


This photo shows the fault-locating equipment set up to locate faults in a 5-k.v. shovel cable coiled outside a quarry electrical shop.

Fault Locating When preliminary insulation tests indicate a defective conductor, the condenser-discharge method is used to locate the fault. Figure 3 shows a diagram of the condenser-discharge method, and Figure 4 illustrates the dimensions of the sphere gap. The magnetic pick-up is one earphone with the diaphragm removed and connected to a pair of 2,000-ohm magnetic earphones, shown in Figure 5. The condenser used is 1 mf., 20,000-v. d.c., shown in figure 6.

The principle of operation in locating a fault or faults, regardless of resistance, is based upon picking up the discharges sent forth by the condenser and spark gap. A high d.c. voltage is used to charge a condenser with the ground side connected to the cable ground wires, adjacent conductors, and shield. When the condenser is charged to a certain value it will flash across the sphere gap which is adjusted accordingly. The other side of the sphere gap is connected to the copper conductor of the faulty phase. A steep wave-front-pulse travels along the copper conductor until it reaches the fault. If the potential of the tracer signal is high enough, or

Front view of the desk-type control cabinet. Test and fault-locating operations are controlled from this panel.



Back view of the control cabinet, the plate transformer, and the filament transformer, which are the three principal units of the d.c. testing device. The control cabinet is separated from the high-voltage equipment for the safety of the operator.

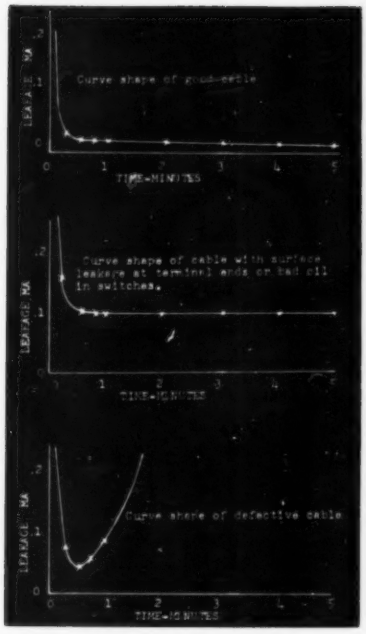

Curve shape of good cable
Curve shape of cable with surface leakage at terminal ends or bad oil in switches.
Curve shape of defective cable
LEAKAGE MA
TIME-MINUTES

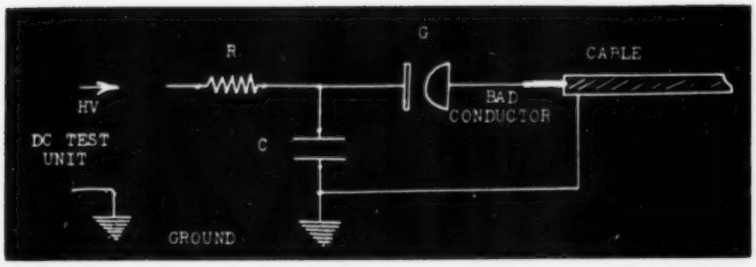
Fig. 2 — Polarization curves showing condition of cable. Sample used was 500 ft. of three-conductor No. 2 strand 5,000-v. cable.

Right: Fig. 5 — Magnetic pick-up used with the condenser-discharge method consists of one earphone (with diaphragm removed) connected to a pair of 2,000-ohm magnetic earphones.

Far right: Fig. 6 — Sketch of the 1.0 M.F. condenser (20,000 v. d.c.) used for locating cable faults.

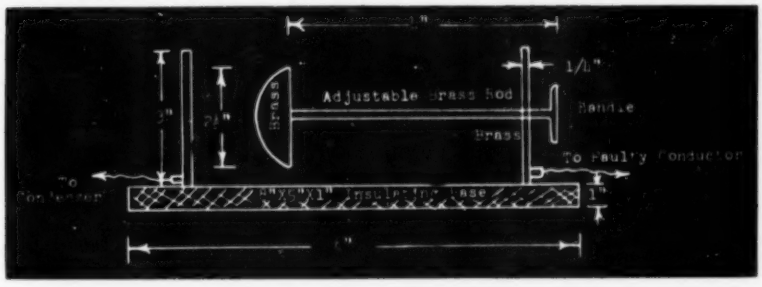
the resistance of the fault is low enough, it will discharge across the fault to ground and return. If the tracer signal does not discharge across the fault to ground, then the cable will remain charged. In such cases, the pulse voltage must be increased by enlarging the sphere-gap distance until such value is reached as to flash across the fault. The maximum voltage applied to the cable is limited by the adjustment of the gap up to 20,000-v. d.c., and the minimum voltage is determined by the resistance of the fault. A small portion of the wave bypasses the fault and is reflected from the far end of the cable which will not affect the results. Figure 7 shows a sketch of how the tracer signal travels along a faulted conductor.

The method of locating the trouble depends upon the nature of the fault. If the fault is not a dead short or water soaked, the discharge signal is audible to the human ear and the operator has only to walk to the point of discharge to locate the fault. This type of fault, found mostly in shielded cables, can be located very easily and quickly. If



Above: Fig. 3 — Diagram of the condenser-discharge method used for locating faults. HV is the high voltage from plate of rectifier tube of the d.c. test unit; R is the 5,000 ohm resistor; C is the 1 MF volt condenser; and G is the discharge gap with one side movable to vary spacing from 0 to 1 in.

Below: Fig. 4 — Dimensions of the adjustable spark gap illustrated in Figure 3.



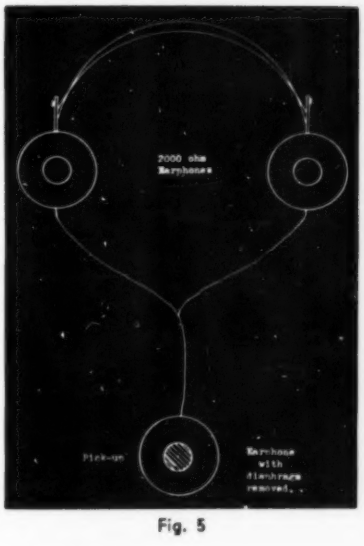


Fig. 5

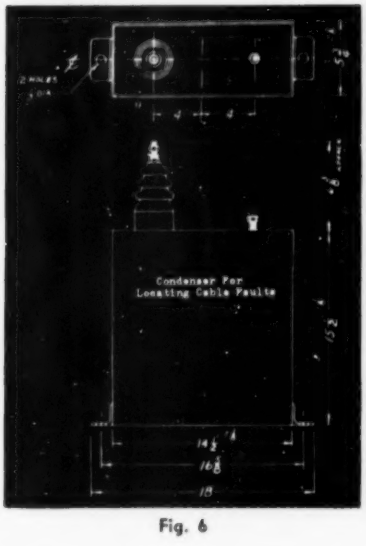


Fig. 6

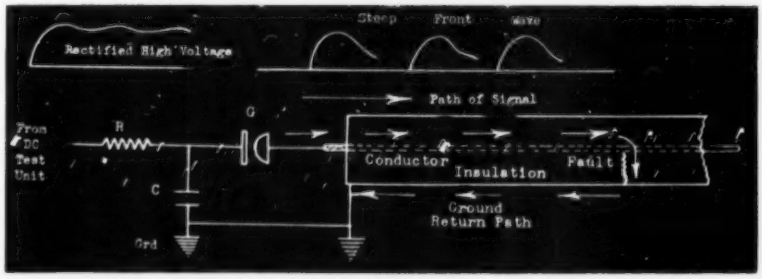


Fig. 7 — This illustration shows how tracer signal travels along a faulted conductor. Steep wave front pulse travels along the conductor to the fault where it flashes through to ground and returns back to the other side of the condenser. A small portion of the wave by-passes the fault and is reflected from the far end of the line. The return path is usually a ground wire, metallic covering, or conductor of an adjacent cable.

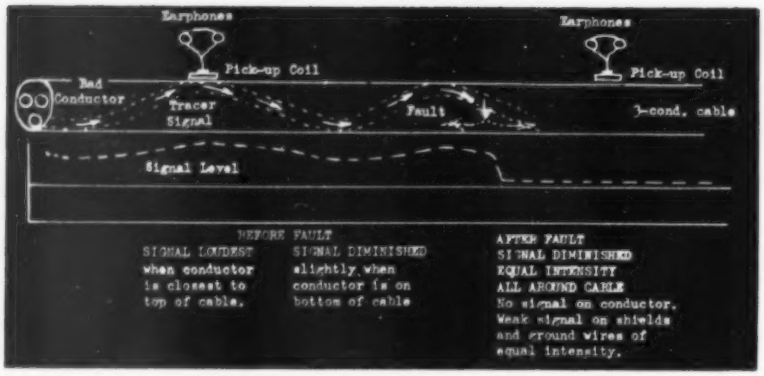


Fig. 8 — Tracer signal pattern in locating a fault. The pick-up coil is moved along the top surface of the cable, starting at the generator. Ahead of the fault, the major portion of the signal is in the conductor, and a small part is returning on the shield and ground wires. The pick-up coil signal varies as the bad conductor spirals around inside the cable jacket, the loudest being directly over the conductor. The signal drops off abruptly beyond the fault and gives a diminished sound of equal intensity all around the cable.

the fault has a very low resistance, dead ground, or is under water, the discharge at the fault is not usually audible, and a pick-up device is required. The procedure is to move the earphone pick-up coil along the top surface of the cable, starting at the source of supply, and to listen for a change in signal, as shown in Figure 8. This type of fault, although not too frequent, is sometimes very difficult to find.

Safety The correlation between safety and good work is very high; therefore, the importance of safety cannot be overemphasized, in using this equipment. Rubber gloves must be used at all times, and under no condition should the test unit be operated without a standby operator. All the packages of the test unit must be grounded at all times and checked periodically. The deadman switch is used by the operator when tests are going on. The equipment should be roped off or placed in a safe location so that no outside man can run into the exposed wires. Although the shielded coaxial test lead offers some protection, caution must be exercised in guarding all exposed ends of the cable under test. Post danger signs in the area where the tests are going on. One of the safety features of this equipment is that the control cabinet is separate from the high potential transformers, so that the operator need not be near the high voltage.

Conclusion Precision testing with direct current and fault location by the condenser-discharge method have been proven to be entirely practical for checking high-voltage mining cables. The use of these methods can be a factor in reducing the "down time" of the equipment which the cables serve, and thus lowers overall operating costs substantially. Simplicity, portability, and safety of operation makes such equipment an asset to mining engineers and electricians.

C. Burton Clark, a member of the research department of Harbisonon-Walker Refractories Company, Pittsburgh, Pa., since 1937, has been named senior mineralogist.

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SAND CLASSIFIERS of the automatic, hydraulic variety made in cone and bowl types in a wide range of sizes to make sharp separations on almost any mesh of sand with almost any volume of water are described in this 8-page *Wood* Auto-Vortex brochure. (1)

BLADES for dozers, scrapers and other equipment are shown in this *Shunk* bulletin. Featured is the Shunk Rhino blade, a new special-alloy steel cutting edge. More than 3000 different blade type specifications are available from Shunk. (2)

WELDING MATERIALS made by *Taylor-Wharton* are featured in this 6-page "how to" bulletin about Tisco Timang manganese-nickel steel welding products and cast mangenese steel bars and repointers. (3)

VIBRATING SCREENS. The *Universal* high-speed Vibrating screens in this new catalog have the same intense vibratory action over every inch of the screening surface for more production per square foot. (4)

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FRONT END LOADER. Four wheel drive traction and a patented bucket rocking action are major features of the *Le Roi* Transo 1½-yd. loader, shown in this 8-page brochure. Also shown is the smaller front-drive one-yard unit. (11)

ENGINEERING HANDBOOK. Valuable information on the design, construction, installation and use of belt bucket elevators fills this 24-page *Goodrich* brochure. Give your title, firm and nature of your business if you want it. (12)

AGGREGATE WIRE SCREENS. Descriptions, catalog data and other useful wire cloth information fill this pocket-size 32-page *Hoyt* booklet on Supertough and Abraso screening. (13)

NEED HELP? Plate fabrication and welding of all sorts—tanks, storage vessels, etc., etc.—is done by *Gussett* of Canton, Ohio. This literature gives you some idea of their equipment and abilities. (14)

STRIP MINING. Five of the largest strip mining operations, moving millions of tons of overburden, are described in this illustrated brochure. *Swan-Finch* lubricants for mining and quarrying are used on the equipment in these operations. (15)

NEW EXCAVATOR. The improved *Koehring* 205 excavator (15-ton crane, half-yd. shovel) is described and illustrated in detail in this 8-page catalog. When truck-mounted, the 205 has a 32.6 mph road speed. Crawler mounting and all attachments are available. (16)

SYNCHRONOUS MOTORS of the engine-type, in ratings of 100 hp and up at speeds to 450 rpm are described in this *Allis-Chalmers* bulletin. Normally open-type motors, they can be had with drip-proof and enclosed construction. (17)

IN-LINE GRAVEL PLANT. The new *Pioneer* 35-S, portable gravel plant "flows" the material longitudinally rear to front. Lightweight, but fitted with the heaviest possible units, it is designed for rapid and frequent moves without dismantling or removing conveyors, etc. (18)

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of a mixture of coarse and fine air-borne particles in a closed circuit dry grinding operation, or in any moving stream of air-solids mixture. (19)

"PROFIT BUILDERS IN PIT AND QUARRY." The complete *Caterpillar* line can serve you, this 8-page brochure points out, showing diesel engines, shovels, bulldozers, earthmovers, graders and scrapers in actual job applications. (20)

TAUTLINE CABLEWAYS. Sixteen pages of photos, sketches and text describe types, spans, working loads and other details of tautline cableways in this colorful *Sauerman* brochure. (21)

DIESEL USAGE. A wide range of equipment fitted with *Cummins* diesel engines are at work on projects all over the nation, this attractive 16-page brochure shows. (22)

HOSE LINE FITTINGS. Flexible hose lines with detachable, reusable fittings for use in every industrial application appear in this *Aeroquip* literature. They cut costs, downtime and inventory. (23)

FLOTATION PRACTICE. A complete, tho' brief summary of the science and art of flotation fills this 32-page brochure from *Denver Equipment Co.* It has value to anyone interested in mineral recovery. (24)

FLEXIBLE COUPLINGS. Seven major engineering advantages are attributed to Fully Crowned Teeth in gear type flexible couplings, described in this *Amerigear* bulletin. Their application for the solution of power transmission problems—misalignment, limited space, high speeds and torque loads, etc.—are described (25)

CEMENT PLANT ELECTRICITY. A detailed discussion of the planning of the electrical distribution system in a new cement mill (in Brazil) is a feature article in a recent issue of the *Allis-Chalmers* "Electrical Review". (26)

ULTRA FINE GRINDING with the *Schutz-O'Neill* superfine pulverized, a centrifugal air attrition impact pulverizer and classifier in a single unit, is discussed in this bulletin. (27)

RIPPER. Rip before excavating for faster loading and greater output, this *Tractomotive* ripper bulletin says. Hydraulic-controlled these rippers fit various Allis-Chalmers dozers and the Tracto-Shovel. (28)

ELECTRIC VIBRATORS. A new line of electric vibrators, for all sorts of materials handling work, is described in this *Cleveland* bulletin. (29)

DRYERS and Impeller Dryers for the non-metallic minerals industries are described in *Hazemag* (Germany) literature. (30)

HARDFACING. A complete line of hardfacing and build-up rods and electrodes are described in this new 48-page *Amsco* catalog. Typical applications, photographs, and a technical advice section are included. (31)

BATTERY CABLE IMPROVED. Your shop foreman will be interested in details about the new *Falcon* heavy-duty battery cable. Easy to install and remove, it needs no pounding, prying or twisting, lengthening battery service (32)

FILM AVAILABLE. A 10-min. sound-color motion picture describing the development, theory, operation and application of the *Sperry* Ultrasonic Reflectoscope for testing metals and other materials may be borrowed by interested parties. The Sperry system detects flaws, stresses and potential failure in shafts and other components. (33)

DUST COLLECTOR. Dust control for finely divided dry dusts can be provided for smaller volume applications at low equipment and installation costs says this *Pangborn* bulletin, describing the Unit-Type CN cloth bag collector. (34)

HEAT-CONTROL PACKAGES. Kilns, dryers, ovens and furnaces can now have individually designed packaged controls, this *Bristol* literature shows. Ten separate systems are offered for the automatic control of any heating application. (35)

UNDERGROUND AIR-CORE DRILLS. Two sizes of air-operated machines for drilling underground (either diamond core-drilling or blast-hole) are described in this *Sprague & Henwood* bulletin. Working data is given. The rod-pulling apparatus, with air-actuated piston, is described. (36)

UNUSUAL SCREENING. The unique screening principle used in the *Sweco* vibrating screen is described in this literature. Included is a file of operational data on specific fields. (37)

ELECTRIC CONTROLS. The latest selection information on motor starters and pushbuttons is contained in a new 6-page *General Electric* brochure. (38)

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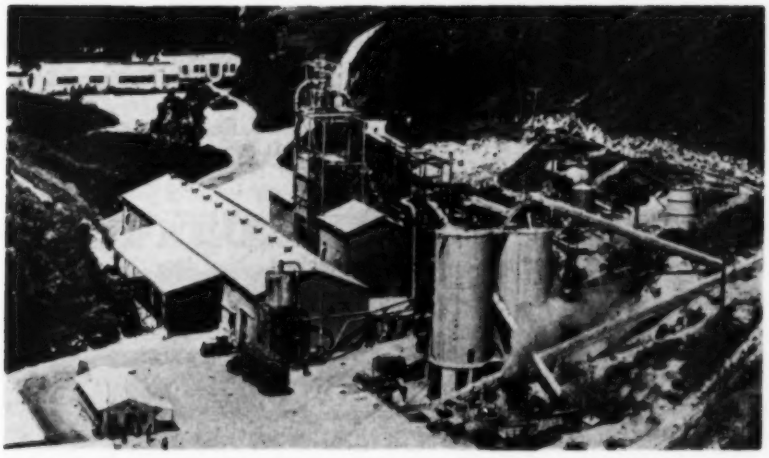
Great Lakes Carbon Corporation To Open New 165-Acre Diatomite Pit



The plant of the Great Lakes Carbon Corporation's Dicalite Division at Walteria, Calif. Here the company will process diatomite from the new 165-acre deposit to be opened just 3 miles away. Trucks will carry the ore from the pit to the plant.

SUPPLIES of crude diatomite from a new deposit in the Palos Verdes hills 25 miles southwest of Los Angeles will insure continued operations of the Walteria, Calif., plant of the Dicalite Division, Great Lakes Carbon Corporation. The Walteria plant was opened in 1930, but the original deposit adjoining the plant has been nearly depleted in recent years. Crude ore has been trucked in from the company's deposits at Lompoc, Calif., about 150 miles distant.

After a series of public hearings the way was cleared on December 29, 1953, when the Los Angeles County Board of Supervisors issued a quarrying permit allowing Great Lakes to mine the material on a 165-acre deposit. In addition, and as a part of the agreement and transaction, Great Lakes through its subsidiary, Rancho Palos Verdes Corporation and the Capital Company, a Transamerica subsidiary and partner in the venture, acquired stock control of 6,800 acres of land in the rolling hills of the Palos Verdes Peninsula.

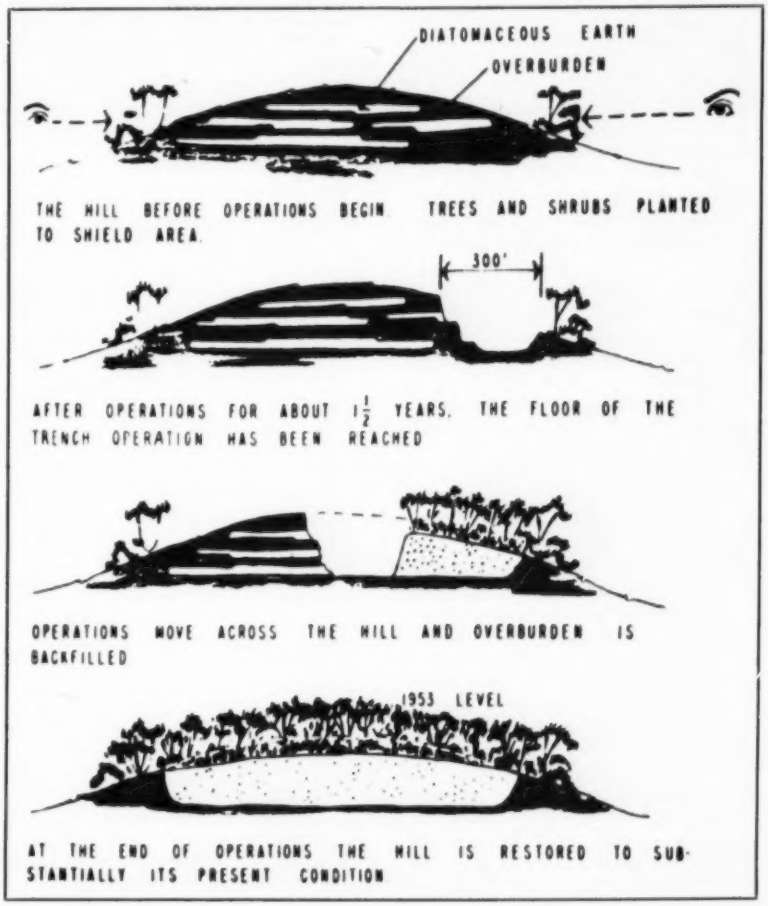
The 165-acre diatomite deposit is located only 3 miles from the Walteria processing plant, and the deposit will be worked by a new type of pit operation which will raise the minimum of dust, create little noise, and be completely hidden from residents in the locality. A trenching, or borrow-pit system is to be used, by which the deposit area will be refilled as excavation proceeds.

As outlined, the deposit is a hill roughly oval in shape, with varying thicknesses of overburden and alternate layers of diatomite ore and undesirable material. The entire hill will be encircled with a band of trees and shrubbery before operations begin. The first operating phase will be to start at one edge and excavate a segment to reach the bottom limit of the deposit. This will establish the floor of the borrow pit. Later steps will consist of excavating and back-filling, moving across the deposit from the starting point. Many years will be required to excavate the entire deposit.

Exploration and test drilling indicated that the new deposit was the only one available which met the requirements of an abundance of high-quality diatomite and nearness to the Walteria plant.

In the early stages of negotiations on the project, it was realized that a commercial operation could not be proposed in an area which, although not substantially developed, was potentially residential in character,

(*Continued on page* 124)


DIATOMACEOUS EARTH
OVERBURDEN
THE HILL BEFORE OPERATIONS BEGIN. TREES AND SHRUBS PLANTED TO SHIELD AREA.
300'
AFTER OPERATIONS FOR ABOUT 1½ YEARS, THE FLOOR OF THE TRENCH OPERATION HAS BEEN REACHED
OPERATIONS MOVE ACROSS THE HILL AND OVERBURDEN IS BACKFILLED
1953 LEVEL
AT THE END OF OPERATIONS THE HILL IS RESTORED TO SUBSTANTIALLY ITS PRESENT CONDITION

A diagram of the borrow-pit method devised by Edward A. Harris, operations manager of the Dicalite Division, to work the new deposit with the minimum of noise and dust. Trees and shrubbery will shield the operations from view.

Report on Current Labor Developments

Employers Encouraging Union Membership

By S. HERBERT UNTERBERGER
S. Herbert Unterberger & Company
Industrial and Labor Economists
Washington, D. C. - Philadelphia, Pa.

WHILE there are very few employers who would consciously encourage union membership in the practical sense, the U. S. Supreme Court recently found three employers guilty of this uncharacteristic conduct—at least, in the legal sense.

These cases arose because both the Wagner Act and the Taft-Hartley Act provide that "it shall be an unfair labor practice for an employer . . . by discrimination in regard to hire or tenure of employment or any condition of employment to encourage or discourage membership in any labor organization. . . ."

In the first case, the employer permitted the union to establish the seniority list. When an employee became delinquent in his dues, he was placed at the bottom of it. Because the employer accepted this new seniority list, his conduct was deemed as tending to encourage membership in the union and, therefore, in violation of the provision of the law prohibiting discrimination. The Supreme Court required that the employee be restored to his previous position on the list.

In the second case the employer acceded to the union's request not to employ a certain man in a certain job which had been offered to him because the union would not give him "clearance" for that job. The Supreme Court also deemed this conduct as encouraging membership in the union and therefore in violation of the same provision of the law. It ordered that the employer be free to employ the man in the position offered.

In the third case the employer granted retroactive wage and vacation increases to union members but not to the non-union employees in the bargaining unit on the ground that he was only contractually bound to give them to the former and not to the latter. This, too, was deemed to be conduct encouraging membership in the union.

In the first two cases the employer's participation in the unfair labor practice caused him no monetary loss only because the legal action was not taken against him but rather against the unions, which in both cases were required to compensate the employee for any losses of pay resulting from the discrimination. In the last case the action was taken against the employer, who was required to compensate all the non-union employees for any loss of pay they suffered by reason of the company's discrimination against them.

In deciding these cases the Supreme Court enunciated several rules which should serve as useful guides to employers:

1. An employer may not encourage union membership. This means more than just encouraging the act of joining and retaining membership in the union. It means also that he may not encourage, by his action, compliance with or enforcement of other union rules. The only exception is that he may require the payment of union dues and initiation fees under a lawful union security contract.

2. An employer may discriminate against an employee for any reason except for the purpose of encouraging or discouraging union activity. The Court specifically said that this "does not outlaw all encouragement or discouragement of membership in labor organizations; only such as is accomplished by discrimination is prohibited. Nor does this . . . outlaw discrimination in employment as such; only such discrimination as encourages or discourages membership in a labor organization is proscribed." In deciding whether an employer

Average Straight Time Weekly Earnings—Office Occupation

Labor Market	File Clerks (Beginning)	Payroll Clerks	Stenographers	Switchboard Operators	Typists (Beginning)
New England					
Boston	$38.00	$51.50	$49.50	$46.00	$41.50
Providence	36.00	48.00	45.00	44.00	39.00
Middle Atlantic					
Buffalo	46.50	55.00	54.50	47.50	47.00
Newark-Jersey City	42.00	55.00	53.88	51.00	45.00
New York	43.00	59.00	55.00	54.00	47.00
Philadelphia	38.00	50.50	49.00	46.00	40.00
South					
Atlanta	39.00	53.00	53.00	46.50	40.50
Baltimore	36.50	52.50	48.50	45.50	39.50
Dallas	35.50	51.00	51.00	44.50	42.50
Memphis	37.50	52.00	47.50	44.00	38.00
Middle West					
Chicago	44.50	59.50	58.50	54.50	49.00
Cleveland	42.50	57.50	56.00	51.40	47.00
Kansas City	37.50	52.00	51.50	47.50	41.00
Milwaukee	42.00	54.50	53.00	50.50	44.00
Minneapolis-St. Paul	39.00	52.00	48.50	46.50	41.00
St. Louis	41.50	51.00	51.00	46.50	43.50
Far West					
Denver	40.00	52.00	51.50	47.00	43.50
Los Angeles	46.00	62.00	59.50	57.00	48.00
Portland	43.50	55.50	54.00	49.50	43.00
San Francisco-Oakland	44.50	62.50	60.50	57.00	49.00

Average Straight Time Hourly Earnings—Plant Occupations

Labor Market	Carpenters maintenance	Janitors	Machinists maintenance	Truckers power (fork lift)	Watchmen
New England					
Boston	$ 1.90	$ 1.22	$ 1.95	$ 1.61	$ 1.27
Providence	1.69	1.17	1.77	1.44	1.25
Middle Atlantic					
Buffalo	2.05	1.45	2.12	1.72	1.35
Newark-Jersey City	2.12	1.39	2.09	1.72	1.30
New York	1.99	1.30	2.13	1.89	1.31
Philadelphia	2.04	1.24	2.05	1.49	1.20
South					
Atlanta	1.82	.99	1.94	1.29	.98
Baltimore	1.78	1.09	2.05	1.54	1.05
Dallas	1.84	1.01	1.79	1.27	1.01
Memphis	1.72	.92	2.00	1.37	.92
Middle West					
Chicago	2.29	1.42	2.25	1.77	1.21
Cleveland	2.09	1.39	2.08	1.74	1.26
Kansas City	2.00	1.20	2.06	1.68	1.23
Milwaukee	2.08	1.45	2.22	1.74	1.31
Minneapolis-St. Paul	2.09	1.27	2.08	1.62	1.40
St. Louis	2.06	1.22	2.15	1.64	1.26
Far West					
Denver	1.89	1.12	1.89	1.47	1.10
Los Angeles	2.10	1.39	2.23	1.80	1.46
Portland	2.25	1.38	2.15	1.79	1.47
San Francisco-Oakland	2.33	1.50	2.26	1.91	1.52

Consider net hp--Consider live wt!

The design of a K-360's crawlers is another important feature. Perfect guiding, self-cleaning, smooth traveling crawler tracks . . . improve operation and minimize wear.

Figure a job with a Speed-o-Matic controlled K-360 ...and your bid will be a tough one to beat!

LIKE all Link-Belt Speeders, a 1½-yd. K-360's 142 net hp gives you more digging power . . . more lifting power than any rig in its class. This quality-built rig has the stamina (see box) to handle the extra net hp week after week . . . month after month . . . without undue wear.

Consider these facts along with the 25% greater output you get with Speed-o-Matic controls, the *true power hydraulic system:* (1) Faster, easier, more accurate operation, (2) minimized operator fatigue or end-of-the-shift letdown, and (3) exceptionally low maintenance and service costs.

These are a few of the reasons why a K-360 helps you get more jobs without shaving profit. Get the complete story. Ask your distributor or write for catalog 2259.

LINK-BELT SPEEDER CORPORATION
Cedar Rapids, Iowa

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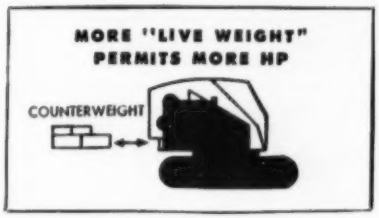

COMPARE 1½-yd. shovel-cranes with and without counterweight. That test spotlights the size, weight and heft built into the working parts and structure. You'll find the K-360 has greater "live weight."

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LINK-BELT SPEEDER

has in fact discriminated to encourage union membership, specific evidence of his intent to accomplish this result is not required. He will be conclusively presumed to have intended that result if the foreseeable consequence of his action is the encouragement of membership in the union.

3. An employer may be guilty of discrimination to encourage union membership even if his action did not really accomplish that result. Thus, in the particular cases considered, encouragement of union membership was inferred even though (a) the reduction of his seniority standing did not immediately get the employee to pay up his dues, or (b) the failure to appoint an employee without clearance did not get the employee to change his union status, or (c) the failure to grant retroactive adjustments did not encourage the non-union employees to join the union as soon as they were permitted.

These cases again illustrate the very careful path employers are required to tread even when they are co-operating with their unions.

Wages in Twenty Labor Markets

The Bureau of Labor Statistics surveys of wages paid for the same occupation across the country are useful to see the variations between geographical areas and for individual employers to compare the wages they pay with the average paid in their area. The accompanying tables provide this information for five key (white collar) office occupations and for five key (blue collar) plant occupations.

Great Lakes Carbon

(*From page* 121)

without proper planning for the entire community. Accordingly, a nationally-known planning group headed by Victor Gruen, A.I.A., was engaged to devise a master plan which will preserve the natural beauty of the area while providing for both the pit operation and a fine residential section containing more than 10,000 home-sites for a possible 40,000 persons. Scenic estates, homes, apartment buildings, as well as shopping, cultural, and recreational facilities, are included in the plans.

The main plant and newest facility of the Dicalite Division of Great Lakes Carbon Corp., at Lompoc, Calif., built early in 1953, was described and illustrated in detail in the June, 1953, issue of PIT & QUARRY. Other plants are located at Terrebonne, Oreg., and Basalt, Nev.

N.Y. Sand-Gravel-R.M.C. Men Hold Winter Meeting in Albany

Seated around the table are (left to right): John Hopkins (Albany Gravel Co.), association treasurer; Wilbur J. Rogers (Hudson Valley Concrete Co.), association secretary; Leon H. Wendel (Gasport Sand & Gravel Co.), association president; David M. Kennedy, guest speaker; Senator Austin W. Erwin, chairman, Finance Committee; Paul R. Smith, executive-secretary of the association; and Lloyd Driscoll (L. C. Whitford Co.).

The winter meeting of the Empire State Sand, Gravel, and Ready Mix Association was held on January 12, 1954, at the De Witt Clinton Hotel, Albany, N. Y. The highlight of the one-day affair was the dinner gathering, which numerous state legislators and state officials attended. This was the first meeting of the association with state delegates, and the event was highly successful.

Guest speaker at the dinner was David M. Kennedy, assistant to Secretary of the Treasury Humphrey, who made a very able, clear, and down-to-earth presentation of the fiscal problems and accomplishments of the national administration. He discussed such timely issues as the budget, tax reduction and revision, debt management, debt limit, and monetary policy. Concerning our debt limit, Mr. Kennedy felt that unless it is raised, the government will find it difficult to operate in the latter part of 1954. He also emphasized that the government is continually surveying each of its activities to see that waste and extravagance are eliminated.

In the line of business, committee reports were presented on the present status of New York State specifications on gravel and ready-mixed concrete. It was agreed that each gravel producer member was to furnish the association office with a Los Angeles rattler test report which would be confidentially tabulated by the executive secretary for use by the sand and gravel committee in developing data and information for the state.

It was also announced that the amended Industrial Code Rule No. 23, which has to do with safety

David M. Kennedy, assistant to Secretary of Treasury Humphrey, addressing the Empire Association.

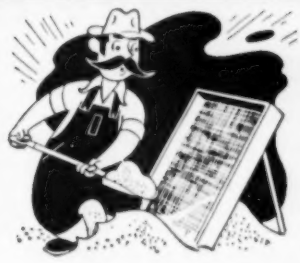
measures, including the equipping of transit mixers with exhaust piping or hose, has not been finally adopted by the Board of Standards and Appeals.

Another phase of activity included a showing of the P. C. A. sound film, *How to Transport, Place, Finish, and Cure Quality Concrete.*

The association announced plans to hold its 1954 annual meeting at the Hotel Statler, Buffalo, on May 10 and 11.

ROY T. COX SR., an engineer for the Texas Gulf Sulphur Company, New York, N. Y., died last December at his home in Galveston, Tex. Mr. Cox was an employee of Texas Gulf for the last 27 years. He was 53 years old.

Screenings



by William M. Avery

ABOUT TO EMBARK on three or four weeks of uninterrupted association gatherings, we are intrigued to note that trade association executives and public relations specialists have finally brought their talents to bear on the over-all problem of how public attitudes toward trade associations can be improved. We hope the boys made some progress toward a solution of this very real problem, but it is our personal opinion that the path they must traverse is a steep and a thorny one.

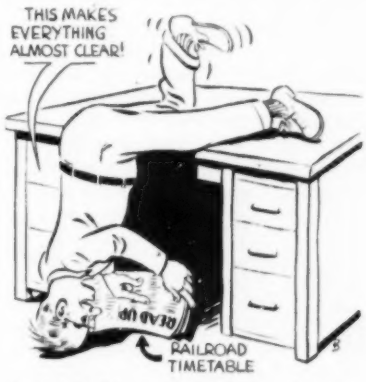
The difficulty, as we see it, is that in a matriarchy, such as we have in this country, public attitude is largely determined by what the little woman thinks, and no amount of testimony to the contrary seems likely to allay the average housewife's ingrained belief that Sodom and Gomorrah at their worst were veritable Sunday-school picnics compared with the goings-on at most association conventions. The notion even persists in regard to those organizations which have successfully urged that their annual gatherings be attended by both husbands and wives, a practice, by the way, which a lot of men feel neatly cancels one of the best arguments for going to conventions in the first place.

It's all very complex, and our advice to the association fellows would be to learn to live somehow with the existing public attitudes. One of the things that helps to bolster convention attendance is the average Joe's wistful notion that some day he'll encounter an affair that is at least a pale reflection of the kind the old timers reminisce about.

That's More Like It

SEVERAL years ago there turned up in this department's mail a promotional pamphlet for *Falk's Graphical Solutions* in which the following assertion was made: "If (this book) accomplishes nothing else, it does suggest that complex mathematics can, for all practical purposes, be made as simple as reading a railway timetable." At the time we wondered, in our droll fashion, if this meant that there were actually mathematical problems *more* complex than reading a railway timetable.

Evidently this aspect of the simile finally troubled even the book's publisher, for in a new publicity release he contents himself with the claim



that "Falk's solutions require no more skill than correctly reading a road map." The matter is of no direct concern to us, except that we're glad to have the reading of railroad timetables restored to the cosmic plane on which it belongs.

Proof Positive

ACCORDING to a recent announcement over the Moscow radio, Soviet scientists have proved to their own satisfaction that the core of the earth is composed of rock, rather than of iron as had been supposed by decadent Western scientists. If anybody had the slightest doubt that Stalin (the man of steel) was actually dead, this bit of news should serve to lay both the doubt and Comrade Joe to rest.

Easy Jackpot

AN item from Gloucester, Mass., tells about an enterprising gent who dived 45 ft. into a water-filled granite quarry and located two slot machines which had been dumped there in Prohibition times. The story goes on to say that when he brought the machines to the surface, out poured $27 in quarters and nickels.

All we've got to say is that in our not-inconsiderable experience with slot machines, no single specimen of the species ever declared a dividend

without more of a struggle than *that*. On the other hand, of course, the machine may have been somewhat influenced by the fact that he had gone to a lot of trouble.

Diminishing Returns

DOWN IN BRAZIL they're having quite a court hassel about the ownership of a 56-pound aquamarine said to be worth about $2,500,000. Aquamarines are a little off our normal editorial beat, but the New York *Times* refers to it as a stone, and what's good enough for the *Times* is good enough for us, we always say.

Anyhow, the *Times* points out that the bauble has reposed in an outsized safety deposit box in New York (rental $122 per year) since November, 1946, when the Brazilian courts first took the question of ownership under advisement. We presume the opposing attorneys have already figured it out, but in case they've been too busy, we'd like to remind them that the deposit box rental alone will consume that $2,500,000 in a mere 20,500 years. It may seem like a lot of leeway right now, but remember, if we may coin a phrase, *tempus fugit!*

Wire Rope and the Drop Ball

another P&Q exclusive

FOR many years some form of weight, dropped from an appreciable height, has been in use in quarries, industrial plants, scrap yards, and on demolition projects for breaking up large boulders, castings, or material

By WALTER C. RICHARDS
Chief Engineer
Leschen Wire Rope Division
H. K. Porter Company, Inc.

in place, into units of such size that they could be easily moved by hand or machine. Within the last few years this practice has been accelerated along with the development of the modern crane, and with the expansion of "suburban" areas close to quarrying operations.

A number of advantages are claimed for the use of the drop ball or "skull cracker" in quarrying operations. Its use eliminates secondary shooting and the handling and storage of dynamite for this purpose. It eliminates neighborhood disturbances caused by dynamite blasting. It produces a labor saving inasmuch as a single crane operator can accomplish what would require several men with drills and dynamite. The operation is a safer one because only one man is exposed to flying rock, and protection for this man can be provided on the crane.

In practically all instances the drop ball is an iron or steel casting made particularly for the individual operation. There are cases, however, where some readily available object of the required weight has been used, such as the worn shaft or spindle of a gyratory crusher. These spindles, weighing around 3,500 lbs., have been found satisfactory by some but not by others. The weight may vary from 2 to 6 tons and the shape may be round, pear-shaped or cylindrical. The weight also may be in the form of a billet of hexagonal or octagonal section about twice as long as it is across. Abrasion is frequently, if not always, a factor to be considered; therefore cast steel of about 0.35 percent carbon, or manganese steel, or forged steel, is recommended.

The wire rope is attached to this weight by various means; and the design of most of these fastenings seems to indicate an attempt to do away with whatever factor is causing rope deterioration. In some cases the rope is clipped directly to some solidly placed pin with or without a swivel. Some operators pass the rope around a sheave welded onto a slot in the ball in an evident attempt to do away with the short bend in the rope. In other cases, a resilient unit is introduced in the shape of an old automobile tire; or a non-rigid connection is provided by using a length of chain between the rope and the ball.

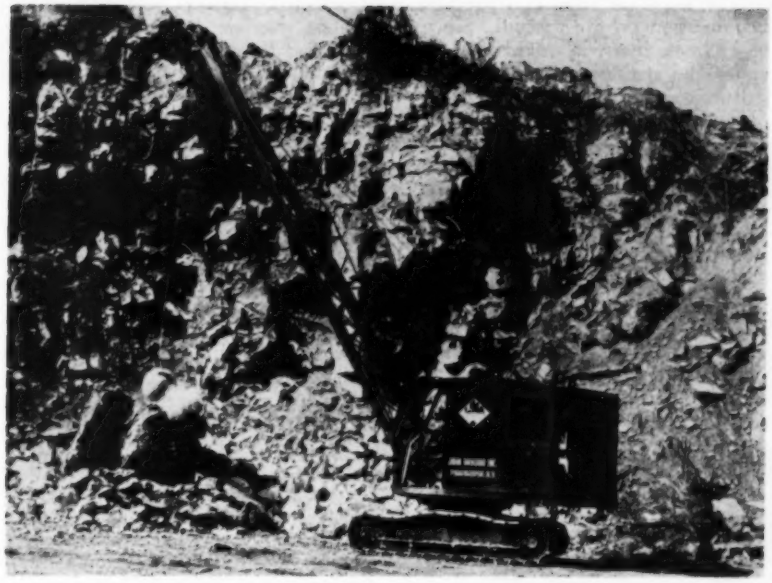
In the drop-ball-operating cycle, the crane operator swings the machine, hoists the ball, and aims it at the rock or rockpile to be shattered. The operator applies the hoist brake the instant the ball hits, to prevent it from rolling away and knotting or cutting the wire rope. A skillful operator hits his target regularly, but even the best will sometimes miss or hit the rock with a glancing blow. In such cases the rope takes the full shock load when the hoist brake is applied, and the shock load is also transmitted to the crane boom.

Thus, the "operator factor" is an important one when wire rope service is considered. It is also important in the selection of the proper rope construction, inasmuch as a skilled operator may be able to get good service out of a rope that would wear out quickly in the hands of an unskilled operator. Naturally, operators want long rope service, and they do their best to obtain it. If trouble develops, sometimes it is difficult to determine the exact source. The probability is that it results from a combination of local conditions on the job. Trouble should always be referred immediately to the equipment manufacturers.

Most operators seem to recognize that the shock of impact either sets up vibration in the rope or tends to develop "bird-cages". Some seem to think that the rope opens up when the ball is lifted, but this opening or bird-caging starts when the ball strikes the rock and the tension is released. A free-falling ball is hard to control, and when it glances off a rock or misses it entirely, the result

A crane with a billet-type drop ball, shown at the moment of impact. Note the momentary slackness in the line.

An old shovel converted for drop-balling, used with an old gyratory crusher head.



A crane using a 2-ton round drop ball in a New York quarry.

is additional abuse to the rope. Also, when the ball strikes the rock, the hoist rope may over-run as much as 5 or 6 ft. This rope, then, at the time of impact is under tension and in a state of stretch or untwist; and the immediate result is the tendency to loop up and throw kinks in itself. In addition, there is a certain amount of back lash at this time, and the rope may slap against the boom with resulting damage to the rope.

There is also present a fatiguing condition as a result of the change from a full load to no load. A rope cannot be provided to withstand all these adverse operating factors, and it is not easy to say positively what should be done to improve conditions. We have to consider the factors of vibration, shock, twisting, bird-caging, and kinking.

When it comes to choosing the proper rope construction, there is a variety of experience. A free-hanging weight seems, in most minds, to call for a swivel and an 18x7 non-rotating rope. However, there are many who prefer 6x37, 6x19 or 8x19 constructions. Also, there is a choice to be made between fiber core and wire rope core, and between preformed and non-preformed rope. Some flattened strand ropes have been tried —and even a reverse lay flattened strand.

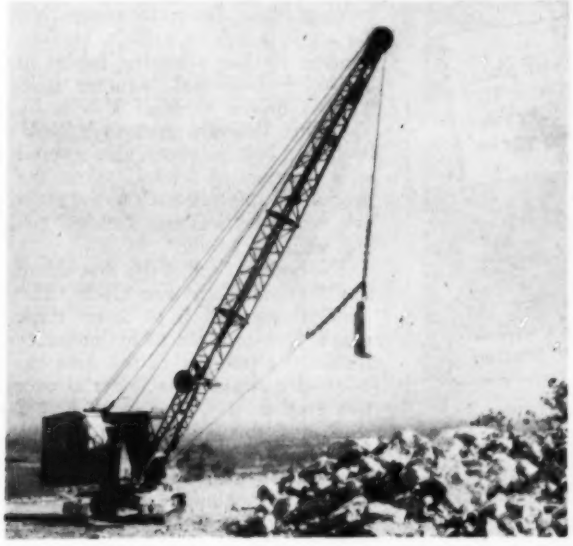
If a tag line could be used, the rotating trouble could probably be controlled, but most lifts are too great. An auxiliary line is used, however, in some cases where the machine has a dragline front end. The line is attached close to the weight and passes over the fair-lead to the drag drum. This undoubtedly assists the operator where the weight is swung out some distance from the machine and may be useful in offsetting the tendancy of the rope to twist.

So far several types of rope have been tried, and it may be too early to say definitely which is the best rope construction. This probably depends somewhat on a number of factors: the weight of the ball; rope diameter; the distance through which it is dropped; and the size, shape, and hardness of the boulder to be broken.

A certain amount of vibration is set up by the impact, and its effects could be reduced by a non-rigid connection. Bird-cages are caused by the sudden release of tension at the time of impact. The untwisting tendency is produced by the stretching of the rope under tension or by the rolling around of the weight. To counteract these destructive influences, an attachment should be made

A pear-shaped drop ball handled by a ½-cu. yd. truck crane. The rubber tire cushions the shock. Note the tagline attached to the cable.

Below: A crane using a drop ball of hexagonal billet form suspended from a chain and controlled by a tagline.



so that the end of the hoist rope will fall to one side. A weight of such shape that it will not roll should be used. The construction of the rope should be such that it will withstand bird-caging, to which an 18x7 rope is very susceptible. A swivel will allow the twist to run out of the rope under tension and return when it is under no load; but it does not always return 100 percent, and the balance between the strand may be eventually upset.

It is advisable not to use a rope with very small wires as it would be easily crushed and abraded. It would seem to be a good idea to provide a length of chain between the rope and the ball to allow for over-running of the hoist rope and prevent accumulation on the ground. Since the chain is inert, it would tend to render the stresses in the rope less destructive.

One theory about wire rope selection is that only used rope should be employed on drop-ball operations. Inasmuch as drop balling is the hardest service that can be given wire rope, it is said to be foolhardy to subject *new* rope to the punishment this rope must take. This practice is truly a hit-or-miss proposition, because the discarded rope may or may not be suited to drop-ball operations. Consequently, the rope may break after very limited service, and, moreover, may break unexpectedly. Such unexpected breaks represent the greatest possible hazards to workmen, and it rarely pays to risk this possibility. If wire rope is to be reused, there are much better applications for it than on drop-ball cranes, for example, as fencing.

Because of the severe shock and extra abuse wire rope must absorb on drop-ball operations, the best quality of rope available should be used. As a general rule, the use of 6 x 19 Improved Plow Steel, regular lay, fiber core, preformed rope is suggested. If ¾-in. or ⅞-in. rope diameters are needed, a 6x37 strand construction might be better.

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is of HIGH QUALITY
It's uniform, light, strong and chemically inert, with excellent wet-dry contraction characteristics — it's highly resistant to repeated freezing and thawing.
PRODUCED AT LOW COST
Combines greater output — a Dwight-Lloyd plant using a standard model machine with a 50' hearth length has a nominal capacity of 425 cubic yards per day; with low fuel consumption — uses 2/3 less fuel than any other process.
with LOW CAPITAL INVESTMENT
The Dwight-Lloyd sintering machine is usually less than 25% of the cost of a new plant.
Complete Plants Designed and Erected

Write for new Bulletin 380 describing sintered LWA.

DWIGHT-LLOYD, Inc.

DIVISION OF SINTERING MACHINERY CORPORATION

130 Sinter Avenue • Netcong, New Jersey

Company Builds 2nd Plant

(*From page 87*)

tons. This feeds the Austin-Western 21- by 38-in. primary jaw crusher, which is driven through flat belts by a 150-hp. Reliance squirrel-cage motor. A 4-in. bar grizzly by-passes the fine material ahead of the crusher onto the belt conveyor. The minus 4-in. stone from this crusher is discharged on the cushion of fine material on the 30-in. by 250-ft. belt conveyor to the top of the screening building. This is a Columbus conveyor with Goodyear belting and is protected from wind and rain by a housing of Armco corrugated metal.

In the screening building the stone is discharged from the main conveyor onto a 4- by 10-ft. 2-deck Tyler Niagara 600 screen. This scalps oversize (2- to 4-in.) through a chute into a 20-ton surge bin over the reduction crusher. This is a long and steep chute with an old jaw plate from a crusher at its lower end. The impact against this plate helps to break up and shatter slabby stone. When the surge bin and its chute fill up, the stone automatically overflows into a chute to one of the truck-loading bins. From the surge bin the stone is fed by a 24-in. by 6-ft. Syntron electric vibrating feeder to a No. 4 Universal hammer mill. This is driven through V-belts by a 150-hp. Reliance motor. A 24-in. by 100-ft. belt conveyor, also covered with corrugated metal, takes the product of this mill back to the main belt conveyor, forming a closed circuit with the screen.

The bottom deck of this first screen has 3 ft. of 1-in. wire cloth. The material through it is damp fines, which goes to a bin as maintenance stone. The last 7 ft. of this deck has 2-in. wire cloth. The material over this section is Ohio No. 1 and 2 stone and this is chuted to another bin. The minus 2-in. stone through this section goes to a 4- by 12-ft. 3-deck Tyler Niagara screen, which usually makes Ohio No. 3, 4, 6, and

7 stone sizes. A change of cloth and blending of number 4 and 6 make it possible to produce No. 46 when it is needed. The stone off the top deck of this screen goes into a chute to the same surge bin feeding the hammer mill. This is also so arranged that when this bin is full, the stone will overflow to a chute to one of the regular bins. The six 50-ton truck-loading bins are of welded steel construction.

A tunnel and pit under the screening building can be used for the installation of a bucket elevator which would feed to another building for the production of various grades of fines, including agricultural limestone. This may eventually be done, but capacity has just been added by the extension of the return conveyor to feed on a 24-in. conveyor which was installed above the main conveyor to the screening building. This discharges the stone on a new 4- by 12-ft. Deister Machine Co. 3-deck screen installed on one side of the screen floor. This is followed by a 4- by 8-ft. 1-deck screen. These two machines rescreen commercial sizes and produce agstone. The present six bins have been partitioned to take care of the two additional products made.

An International K14 truck with a 12-ton Daybrook Boulder-Dam type body is used to haul stone from the bins to stockpiles. Reclaiming from stockpiles into trucks for shipment is done by a 1¼-cu. yd. Marion 450 gas-electric shovel and a Haiss bucket loader. All shipments are weighed on a Fairbanks 50-ton scale with a 10- by 50-ft. concrete platform.

The president of the Michigan Stone Company is S. C. Johnson. F. E. Friesner is general superintendent; R. J. Heckathorn is plant engineer, and H. R. Friesner is plant superintendent.

Washington News

(*From page* 90)

$12,000,000,000. Elementary and secondary school enrollments over the next four years will grow by about 1,500,000 a year, which, together with normal replacement of obsolete schools, would add an annual construction requirement of about $3,000,000,000. A total annual expenditure of about $5,500,000,000 would therefore be necessary to meet current needs and to eliminate the backlog of such school facilities within five years. Clearly, the needs of education cannot long be deferred.

"The backlog for college and university construction is reported to be in the neighborhood of $6,000,000,000. About 2,250,000 students are now enrolled in institutions of higher education, and by 1960 the number may approximate 3,000,000. If the construction backlog were worked off over a period of 10 years, and the additional facilities required for current growth in enrollment were put in place, the expenditure would average about $1,250,000,000 per year. By adding this figure to that for primary and secondary school structures, we get an estimate of $6,750,000,000 per year for school construction, which compares with a current rate of about $2,500,000,000.

"Hospitals are another large potential of state and local construction. The state hospital plans approved under the Hospital Survey and Construction Act indicate a need for over 500,000 hospital beds, of 1,500 primary health units, and of 1,350 auxiliary health units. To adhere to the standards set up under this act and meet the backlog of hospital needs in the next ten years, it would be necessary to spend more than $1,500,000,000 a year. Currently, about $600,000,000 is being spent.

"The accumulated requirements of local water and sewerage facilities are impressive. To eliminate the backlog

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PROVIDE AIR

It will PUSH front end loader with bucket (illustrated), or angle dozer blade, rotary sweeper, snow plows, etc., . . . PULL anything a wheel tractor will, with either front or rear winch . . . POWER any hydraulically, mechanically and pneumatically operated equipment such as back hoe (illustrated), post hole digger, scaffold boom, etc., . . . PROVIDE AIR for any pneumatic tools that can be operated from a 105 C.F.M. AIR COMPRESSOR.

FOR FULL DETAILS WRITE TODAY

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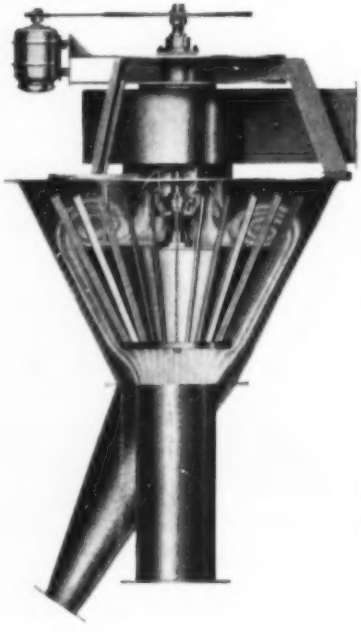
of water facilities within five years, and also provide for current growth of population, annual expenditures would have to come to about $1,200,000,000, compared with a current rate of $500,000,000. Even more serious is the shortage of sewers and industrial waste facilities, the capacity of which has not kept pace with the rapid urban growth of the last decade. To meet these requirements within five years, as well as to provide for current growth, annual expenditures of $1,800,000,000 are necessary, which compares with a current rate of about $600,000,000.

Not only does the President's report see the need for these extensive state and local projects but it also finds that the governments in question will be able to pay for them. It states: "The financial situation of state and local governments is favorable to a continued rise in their expenditures. State and local receipts have increased by roughly $2,000,000,000 a year in the postwar period, with the total rising from $13,200,000,000 in 1946 to almost $28,000,000,000 in 1953. Preliminary estimates indicate that receipts and expenditures were in balance during 1953. Further evidence of the financial strength of state and local governments is the size of their cash and U. S. security holdings, which reached $23,000,000,000 in mid-1953. Some part of this amount is committed, but the uncommitted portion is undoubtedly large, relative to current expenditures."

The Eisenhower report not only paints a picture of confidence in the economic future, but makes out a good case for believing that this confidence is well founded.

HARDINGE PLACES NEW TYPE "GYROTOR" AIR CLASSIFIER ON THE MARKET

Hardinge Company, Incorporated, announces a completely new type of dry classifier — the "Gyrotor" Air Classifier, for extremely close control of product in a dry grinding or separating operation. It can be used in closed circuit with a pulverizing mill or as a self-contained sizing unit for any moving stream of air-solids mixture.



The classifier is basically an inverted, truncated-cone shell with a motor-driven, bladed rotor of similar shape revolving on a vertical center axis inside the outer shell. The raw mixture of coarse and fine air-borne material is fed in from the bottom of the cone, passes upward in the annular space occupied by the whirling blades, describes a doughnut-shaped motion above the rotor, and discharges through a central opening in the top. Oversize not removed by the impact of the blades drop out in the eddy current above the rotor and centrifugal action deposits it on the outer shell of the classifier, where it slides to the oversize discharge at the base of the shell. The returning oversize is definitely cleaned of fines due to the winnowing action of the rotor blades in the annular space.

The classifier has a wide range of fineness control, and adjustment of product size is made simply by changing the rotor speed.

Hardinge Bulletin AH-449-8 describes this new classifier in detail.

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Soil Acidity

(*From page* 86)

ions and would help us get a picture of the dynamics by which these move toward the plant root for entrance there and nutrition of the plants.

Since the hydrogen ion, a non-nutrient, is positively charged, as are the nutrients calcium, magnesium, and potassium, it is significant to consider hydrogen along with these as the combination representing almost the total exchange capacity of the soil. From this total capacity the ratios of the percentage saturation of that capacity by the nutrients (and also by hydrogen, a non-nutrient) may be calculated and adjusted by fertility treatments for most efficient plant nutrition.

The pH, then, serves to suggest the degree to which the total potential stock of nutrients in the soil has been replaced by hydrogen, a non-nutrient; but it gives no suggestion as to which nutrients are grossly deficient or to what degree the nutrients are imbalanced. It is not an indicator of what kinds or amounts of fertility are required to make the soil productive, and has therefore been a hazard to keeping soils productive and in nutritional balance. Undue emphasis on, and attention to, the pH of the soil to the extent of disregard of the soil's fertility saturation for plant nutrition suggests itself as a case where "a little knowledge can be a dangerous thing".

Sulphur Production Declines Slightly in September, 1953

The domestic sulphur industry produced 415,641 long tons of native sulphur and 24,500 tons of recovered sulphur (of a purity of 97 percent or greater) during the month of September, 1953, according to reports of producers to the Bureau of Mines. This represents a decline in native sulphur output of 8 percent from August, 1953, and 3 percent from September, 1952.

From preliminary figures through the first nine months of 1953, it appears that 1953 production will fall a little short of the record level attained in 1952. Production through September, 1953, amounted to 3,916,484 long tons or about 2 percent below the same period in 1952.

Bituminous Plant Ends Dust Nuisance— Expands Community Good-Will

DUE to residential encroachment, the Cheektowaga, N.Y., plant of Bituminous Products, Inc., was faced with the problem of controlling dust that for years had been discharged to the atmosphere. As residential property expanded in proximity to the plant, the management was the target for an increasing number of complaints on the nuisance created by this dust.

The source of this nuisance originated in the screenhouse, where the heated (300 to 400 deg. F.) limestone aggregate is dumped from a conveyor. So that the motors and bearing operating house would not overheat, the structure had to be kept open, with the result that the dust created in the screening operation was passed into the atmosphere. The particle size of this dust averages about that of women's face powder: 98 percent to 100 percent will pass through a 200-mesh screen.

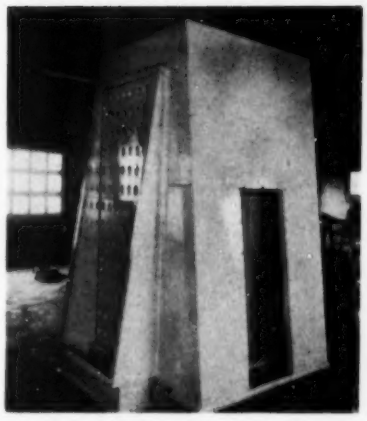
When residential property was situated at a distance from the plant, there had been no complaints and no attempt at controlling the dust had ever been attempted. In view of the increasing number of complaints, however, the management felt that good community relations could be established if this nuisance were eliminated. Moreover, the officials realized that they could prove their sincerity by taking the initiative before they received unfavorable publicity through official action of the town authorities.

In approaching the problem of control, the company wanted collection equipment that would operate efficiently yet could be installed economically. As the company operates a number of wet-type collectors at the Cheektowaga plant and at other plant locations, it was felt that the limitations of an inadequate and costly water supply plus the maintenance and slurry disposal problem precluded further consideration of this type of equipment. In addition, the management had to consider the need of a collector that would operate at or below freezing temperatures, which are common in this area by mid-October and can be expected to last as late as April.

William Tarbell, manager of the Cheektowaga plant, and other company officials decided to investigate the possibility of using a mechanical-type collector manufactured by the Dustex Corporation of Buffalo, N. Y. To prove the ability of their collector to do the job and effectively eliminate this nuisance, the Dustex Corporation installed a full-size, 8-tube test unit in the Lackawanna, N. Y., Bituminous Products plant. Tests were conducted under actual operating conditions for company officials, and proof of the efficiency of this equipment to collect these fines was visually demonstrated.

A view of the Cheektowaga, N.Y., plant of Bituminous Products, Inc., showing the two dust collectors which control dust originating in the screenhouse. Collected dust settles by gravity to drums at ground level.

As a result of these tests, two single-bank D-52 Dustex collectors were installed in the Cheektowaga plant to bring about the desired control. To simplify installation and reduce installation costs, these units are mounted on the outside and flush with the screenhouse wall. This arrangement eliminated the need for an inlet transition and duct, as the inlet face of these units formed a part of the wall of the dust-laden room.



The dust collector, shown with the inlet cover plate. The inspection panel has been removed to show the arrangement of tubes. The hopper is not shown.

The room was closed off so that no dust seepage to the atmosphere could occur. Due to the large volume of air changed per minute, all motors and bearings are running noticeably cooler, and maintenance on this equipment has been drastically reduced. Under average plant production conditions about 1½ tons of dust is recovered daily. After being collected, the dust flows by gravity to storage bins at ground level.

The Bituminous Products management is well satisfied with the results of the firm's efforts to be a good neighbor. During 1953, the first full year of operation for the Dustex equipment, not a single complaint was made against the company. Shortly after these units were put into operation, the city of Buffalo and surrounding communities began a drive against air pollution created by the industries in the area. Because Bituminous Products had corrected a dust problem on its own initiative, no adverse publicity was directed against the firm at this time.

It has been unnecessary for the Bituminous Products personnel to spend time or effort in maintaining or cleaning equipment, and the disposal of the collected material has been simplified. In addition, the plant has been operated during freezing weather.

F. Robert Campbell, former assistant chief packaging engineer for Armstrong Cook Company, has been appointed packaging manager for the National Gypsum Company, Buffalo, N. Y. He is a past president and past director of the Eastern Division of the Society of Industrial Packaging and Materials Handling Engineers.

Pennsylvania Stone Producers And Highway Materials Men Meet

Present at the board of directors' meeting of the Pennsylvania Stone Producers Assn. were: (seated) Nick Cascetti, Stowe Trap Rock Co., Oreland; Clarence Wiest, D. M. Stoltzfus & Son, Talmage; John D. Teeter, John S. Teeter & Son, Inc., Gettysburg; Leonard S. Fry, Fry Coal & Stone Co., Mercersburg; Lewis M. Nauss, The Carbon Limestone Co., Lowellville, Ohio; John Rice Jr., The General Crushed Stone Co., Easton; (standing) J. C. Showalter, Blue Ball; Tom McPoyle, The John T. Dyer Quarry Co., Birdsboro; F. I. Narehood, Narehood Bros., Milton; H. H. Wagner, general manager of the association, Harrisburg; Paul I. Detwiler, retiring president of the association, New Enterprise Stone & Lime Co., New Enterprise; H. Melvin Binkley, Binkley Bros., Inc., East Petersburg; Robert Garman, incoming president of the association, Tyrone Lime & Stone Co., Tyrone.

Stone Producers' Meeting The Pennsylvania Stone Producers Association held its annual meeting at the Hotel Penn-Harris, Harrisburg, Pa., on January 28, 1954, with president Paul I. Detwiler presiding. Mr. Detwiler gave a brief resume of the conditions existing in the stone industry throughout Pennsylvania. He noted that small crushed stone operations with relatively low production are gradually disappearing and being replaced by large, highly mechanized plants with high hourly output.

Treasurer H. M. Binkley reported on the fiscal affairs of the association, and H. H. Wagner, general manager of the association, gave a statistical report on aggregates used by the Pennsylvania Department of Highways in 1953. He stated that the crushed stone producers sold a slightly larger tonnage to the Highway Department for maintenance and construction in 1953 than was sold in 1952.

After a full discussion of proposed truck legislation, the president appointed F. I. Narehood, Leonard S. Fry, Thomas P. Rogers, and T. C. McPoyle to a committee to consider the type of legislation which would be necessary to give relief to the crushed stone and ready-mixed concrete industries.

Another committee consisting of Oscar Benson, Paul White, Thomas Rogers, and George DiFrancesco was appointed to study the problem of damage suits from blasting. The committee was instructed to develop plans so that each quarry operator would have the necessary records and scientific data to combat future blasting damage suits, as well as information which would be helpful if and when the state legislature formulates future laws covering the use of quarry explosives.

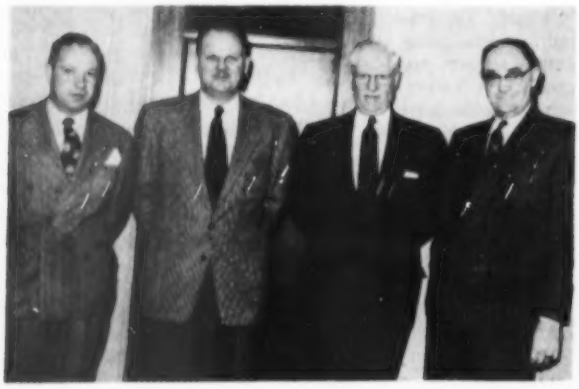
The matter of having legislation enacted which would require contractors bidding on highway construction to file the sources of material supply with their quotation was thoroughly discussed by various members of the industry. The matter was tabled until a rough draft of the proposed legislation could be submitted to the board of directors or the executive committee.

The following were elected officers for 1954: R. B. Garman, Tyrone Lime & Stone Co., Tyrone, Pa., president; John D. Teeter, John S. Teeter & Sons, Gettysburg, Pa., vice-president; H. M. Binkley, Binkley Bros., Inc., East Petersburg, Pa., treasurer; and W. H. Fehr, Berks Products Corp., Reading, Pa., secretary.

Elected members of the board of directors were the following: Eastern Section, W. E. Wilson, Hoffman Bros. & Wilson, Harrisburg, Pa., and J. C. Showalter, Showalter Quarry, Blue Ball, Pa.; Central Section, Paul E. White, Valley Quarries, Chambersburg, Pa., and F. I. Narehood, Narehood Bros., Milton, Pa.; Western Section, Lewis M. Nauss, The Carbon Limestone Co., Lowellville, Ohio, and Adam Eidemiller, Eidemiller Enterprises, Inc., Greensburg, Pa.

Daniel Miller Jr., Portland Sand & Gravel Co., Portland; Neil Culbertson, General Concrete Products Corp., Warren; J. P. Eyre Price and A. C. Caldwell, both of Wyoming Sand & Stone Co., Scranton, Pa.

H. F. Rath, incoming president of the Pennsylvania Slag Assn., Buffalo Slag Co., Erie; E. J. Nunan, Buffalo Slag Co., Buffalo, N. Y.; John W. Fadler, Birdsboro Slag Co., Birdsboro; Fred R. Steinacker, Penn-Allen Slag Co., Allentown; George L. Kulp, Birdsboro Slag Co.



Highway Materials Meeting On the following day the recently-formed Pennsylvania Highway Producers Conference was held, with Robert B. Garman, newly-elected president of the Pennsylvania Stone Producers Assn., presiding. The group was formed in 1953 by the Sand and Gravel Association, the Pennsylvania Slag Association, and the Pennsylvania Stone Producers Association. The Bituminous Concrete Association of Pennsylvania was also represented at the meeting. Approximately 200 members and guests attended.

C. H. Buckius, chief engineer of the Pennsylvania Department of Highways, gave a brief talk on the 1954 highway maintenance and construction program, and then submitted a photostatic copy of the detailed material requirements of the department by counties.

Caryle Gray, director of the Pennsylvania Geological Survey, explained the purpose of the survey and the work which had been done during the last several years. He pointed out that a reduction in the budget funds for the biennium would mean that much of the field work which had been done would not be made public for lack of publication funds.

Mr. Gray stated that Pennsylvania has great wealth in natural resources, but that these are being rapidly depleted and that geological research surveys are not keeping abreast with the requirements. He pointed out that Pennsylvania appropriated for two years for the Department of Geology less than it would cost to build one mile of two-lane modern highway.

John D. Paul, chief construction engineer of the Pennsylvania Turnpike Commission, discussed the plans and general location of the north-south extension of the Pennsylvania Turnpike. George Rahn Jr., chief materials engineer of the Turnpike Commission, told the group that the Turnpike was not planning any material changes in the coarse and fine aggregate specifications for this new extension.

Harry G. Banzhoff Jr. and Irvin Graybill, attorneys representing the Pennsylvania Department of Revenue on the 1 percent sales tax, conducted a question-and-answer program on the application of the tax.

Rex S. Baird, 44, assistant general superintendent of operations for the Utah Sand and Gravel Products Corporation, Salt Lake City, died on Janury 28 in a hospital after an illness of a few days. At the time of his death he was in charge of the Cottonwood Heights plant.

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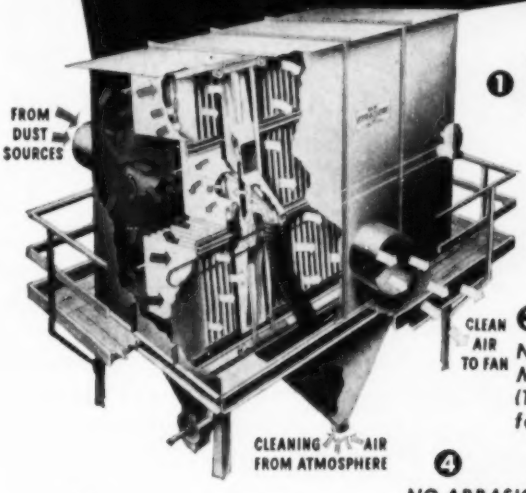

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HOW IT OPERATES

(a) Dust laden air is drawn in from the dust sources as indicated by the shaded arrows.

(b) It is diffused into the dust chamber by the baffle plate.

(c) It is then drawn through the fabric of the filter bags and is cleaned as shown by the clear arrows.

(d) Clean air passes out of the case and goes to the suction fan.

(e) Concurrently, the traveler moves back and forth across the dust wall registering successively with one bag at a time.

(f) The suction which exists in the dust chamber draws a blast of atmosphereic air through the bag in reverse directions and cleans that bag. (No shaking.)

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Pick a MARION BODY and HOIST for *Always Sure* Dependability

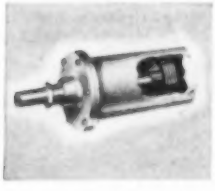
You'll find every Marion Body and Hoist is . . . tougher . . . better performing . . . and more dependable . . . regardless of dumping and hauling conditions. Whether your requirements call for a standard or special body and hoist to meet individual problems, Marion's "Designed on the Job" models will do the work more efficiently and economically and will last longer.

Why not see your nearby Marion Distributor for more in-the-field proof . . . or write direct . . . today.

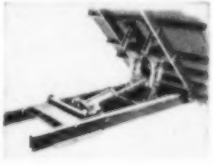
HERE'S WHY MARION HOISTS . . . LAST LONGER . . . GIVE BETTER PERFORMANCE . . . ARE MORE DEPENDABLE AND ECONOMICAL TO OPERATE.

The secret is in the double equalizing lift arms. By carefully designing the curved lift arm tract to the circular path of the rollers, Marion engineers have succeeded in accomplishing outstanding performance. The hoist starts at extremely low oil pressures and continues to lift smoothly without fluctuation or pressure surges even when the loads are retained in the body such as in spreading.

Marion pumps are built to last. Meehanite housing is used with case-hardened gears and shafts. Four anti-friction needle bearings assure smooth performance. Patented valve gives positive control for spreading . . . check eliminates back pressure. Valve action is progressive—raise, hold and lower.



Cylinders are made of seamless steel tubing bored and finished to a glass-like smoothness. There is a bolted leak-proof head. Piston has four iron Graflox-treated quick break-in rings — one ring per groove.



Hoist sub-frame is designed to give increased strength with a minimum of weight. Rear of the frame is enclosed. The point of support at base of cylinder is designed to withstand excessive horizontal and vertical stress.

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A complete line of standard and special hydraulic hoists & dump bodies to fit every need

2,800 Attend Sessions Of 35th A.E.D. Convention At Waldorf Astoria Hotel

The Associated Equipment Distributors' 35th annual meeting, held at the Waldorf Astoria Hotel in New York City on January 31 to February 4, was the largest convention in the association's history. More than 2,800 American and Canadian equipment distributors and manufacturers attended the five-day affair.

George W. Gagel, president of Machinery & Supplies Co., Inc.,

George W. Gagel, Machinery & Supplies Co., Inc., Kansas City, Mo., new A.E.D. president.

Kansas City, Mo., was elected 1954 president, succeeding S. John Oechsle, president of Metalweld, Inc., Philadelphia, Pa. Mr. Gagel took the president's oath of office at the association's Annual Installation Luncheon on February 3. Five other executive officers and directors were sworn in at the same time. They included the following: R. J. Finn, Bode-Finn Company, Cincinnati, Ohio, executive vice-president; S. F. Laskey, Northwestern Equipment Company, Fargo, N.D., vice-president; L. M. Doolen, Telford Equipment Company, Lansing, Mich., vice-president; R. S. Hamilton, Sheridan Equipment Co., Ltd., Toronto, Canada, vice-president; and F. J. Fitzpatrick, Parker-Danner Company, Hyde Park, Mass., treasurer.

Mr. Gagel's election to the presidency climaxes his rise through a succession of executive positions. During 1953, he served as executive vice-president and member of the insurance trust. He has been a mem-

ber of the board of directors since 1952, and has served two terms as director of Region IX, which embraces Kansas, Nebraska, Iowa, and Missouri. Mr. Gagel has also been chairman of the planning and promotions committee, and was twice president of the Equipment Distributors Assn. of Greater Kansas City.

The convention program opened on January 31 with a "Meet Your Manufacturer" session, which gave distributors and manufacturers an opportunity to meet and arrange for individual conferences later in the week. The Monday morning session opened with the "Early Birds' Breakfast", which was sponsored by the Pennsylvania members of A.E.D. S. John Oechsle, retiring president, received the first of several honors at the breakfast gathering.

One highlight of the meeting was a discussion of the sales outlook of 1954, in which three top sales executives took part — Leo Cherne, executive director of the Research Institute of America; Walter H. Johnson Jr., secretary of American Air Lines; and A. N. Seares, vice-president of Remington Rand.

Dr. Harold H. Maynard, Ohio State University, moderated a panel on sales and cost-reduction.

33 Long-Time Employees Honored by Ottawa Silica

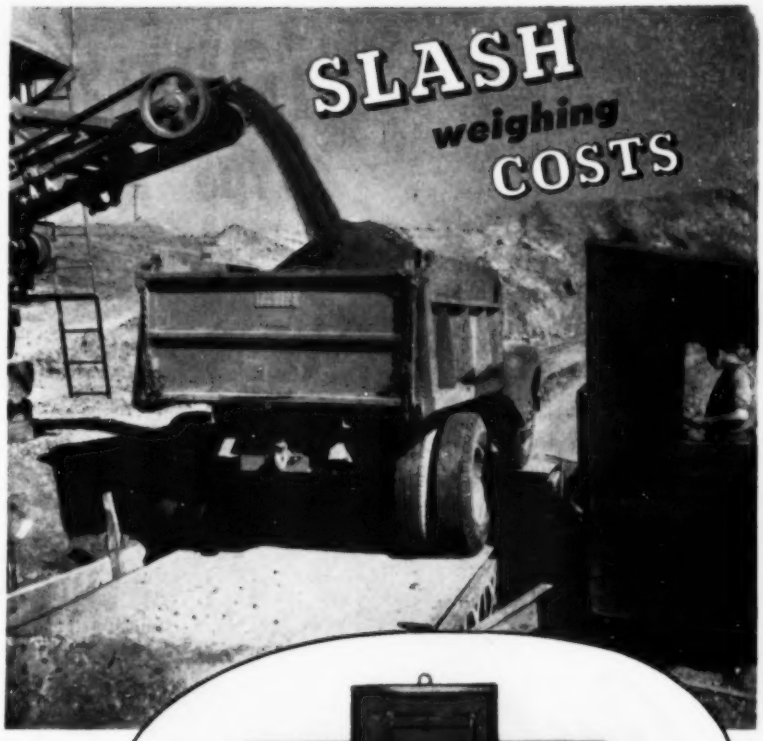
The Ottawa Silica Company, Ottawa, Ill., recently honored 33 active and retired employees who have served the company for 25 or more years. G. A. Thornton, president, was in the group.

At a special banquet in LaSalle, Ill., the men were presented with Hamilton engraved gold watches and the ladies with Hamilton diamond-studded white gold watches. H. C. Thornton, vice-president, introduced the guests, whose combined years of service total over 1,000 years.

Ludlow-Saylor Wire Cloth Co. Buys Star Wire Screen & Iron

Ludlow-Saylor Wire Cloth Company of St. Louis has acquired the assets of Star Wire Screen and Iron Works of Los Angeles, and will operate this establishment under the name of Star Wire Screen & Iron Works, Inc., at the old location, 2515 San Fernando Road.

Star Wire Screen and Iron Works has specialized for over 30 years in the manufacture of abrasion-resistant woven wire screens and wire cloth. Ludlow-Saylor Wire Cloth Company manufactures a complete line of abrasion-resistant and corrosion-resistant wire cloths and screens for all industrial purposes at its main plant in St. Louis.



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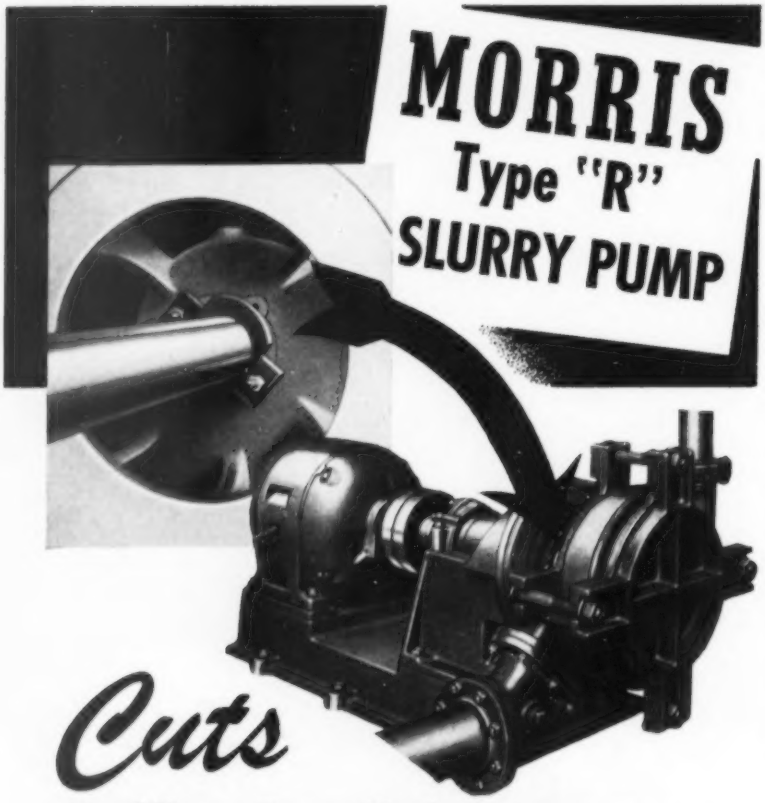

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If no other Type R feature were listed, here's one that says: Specify Morris. But there's even a bigger story. Ask for further information of this outstanding slurry pump, servicing scores of material handling applications.

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- ✔ EASY TO INSTALL
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Specify MORRIS Type "R" SLURRY PUMP

MORRIS MACHINE WORKS
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MORRIS Centrifugal Pumps

Natl. Gypsum Announces $6,000,000 Investment At Nova Scotia Deposit

Approximately $6,000,000 will be invested by the National Gypsum Company in development and shipping facilities for a deposit believed to be the largest single commercially pure gypsum bed in North America, about 30 miles north of Halifax, Nova Scotia.

It was indicated that work would begin soon on excavation of the deposit and construction of piers. Production is scheduled to start in 1955 at the rate of 1,500,000 tons annually. The gypsum will be shipped by water to National's plants at Portsmouth, N. H., New York, Baltimore, and Savannah.

According to Toronto sources, the new deposit, which will replace the quarries now operated at Dingwall, N. S., will be a 12-months-a-year operation. Deposits at the new site near Shubenacadie contain supplies estimated sufficient for at least 200 years, possibly for 400 or 500 years.

Bauxite Production Drops Slightly in 3rd Quarter, 1953

Mine production of bauxite by the eight companies operating in the United States decreased 6 percent from the second to the third quarter of 1953, and it appears that the annual total may fall slightly below that of 1952 to approximately 1,600,000 long tons (dry equivalent). Arkansas produced 97 percent of the third quarter output; the remainder was produced in Alabama and Georgia.

Domestic bauxite production from January through September, 1953, totalled 1,179,351 long tons, which was about 18,000 tons lower than the corresponding period in 1952. Offsetting this minor decline in domestic production during the comparable nine-month period was an increase of imports of about 700,000 tons or about 28 percent, bringing the total imports during the 1953 period to 3,213,753 tons. Based upon the latest data available, it appears that the total new supply of bauxite will reach a record high of 5,900,000 tons, an increase of 13 percent over the peak established in 1952.

Oregon Diatomite Concern To Work 300-Ft. Deposits

Dan W. Hartley, secretary of the Malheur Wonder Earth Company, Vale, Oreg., has announced that diatomite deposits soon to be mined by this newly-formed concern run to the unusual depth of 300 ft. Preliminary tests reportedly reveal that the depth may extend down several times that distance on 4,000 acres leased by the firm.

Deposits now being worked are located in the Malheur Valley between Harper and Westfall, Oreg., in a 55-square mile area. Diatomite in its crude form already has been shipped from the mine.

It is reported that a plant will be built near Harper and that production will begin in the near future. Processing facilities are expected to cost approximately $52,500.

Heading the company as president is Don Galbreath. Other officers include

the following: Robert Lytle, vice-president; Kenneth Johnson, treasurer; and Roy C. Rush, assistant secretary and treasurer. The Tidewater Commercial Company of Portland has been named sales and distribution representative for the producer of Malheur Wonder Earth in the Pacific Northwest.

Fluorspar Consumption Reaches Peak in 2nd Quarter, 1953

Consumption of fluorspar reached the unprecedented total of 159,745 tons in the second quarter of 1953, according to reports to the Bureau of Mines. Consumption at hydrofluoric acid plants increased 23 percent over the first quarter, while total consumption increased 7 percent. Production and shipments of domestic fluorspar also increased; 84,073 tons were produced and 88,718 tons shipped, increases of about 7 percent in output and 27 percent in shipments, compared with the first quarter. Imports in the second quarter were 28 percent greater than in the preceding quarter and exceeded domestic production by about 10 percent.

Fluorspar production and shipments for the first six months of 1953 totalled 162,381 tons and 158,662 tons respectively; this was virtually the same output figure as that recorded for the similar period in 1952, but represents a 7 percent increase in shipments. From the data it appears that 1953 output will approximate 345,000 tons.

In the second quarter production and shipments of metallurgical grade fluorspar of domestic origin were 33,636 tons and 37,854 tons, respectively. Of these shipments, 81 percent were from the Illinois-Kentucky district and the remainder from Utah, Nevada, and Idaho.

Fire Destroys Building, Gear At Spencer Sand-Gravel Co.

Flames which swept through the repair and storage building of the Spencer Sand and Gravel Company recently near Belvidere, Ill., caused damage estimated at $10,000 to $12,000 to replacement parts and machinery, and destroyed the structure. Some equipment was saved, but the intense heat from burning oil and kerosene prevented the removal of heavy pieces, cable, chains, etc.

It was thought that the blaze might have started when fumes from spilled gasoline near the furnace were ignited.

Limestone Quarry Operators Give County $35,000 Present

Among the more unusual gifts noted in the press was the donation of a $35,000 reinforced concrete bridge to Crawford County (Ohio) commissioners by the National Lime and Stone Company, Findlay, Ohio. The structure, 24 ft. wide and 50 ft. long, was built by the company according to Ohio Highway Department specifications. It spans the south end of the quarry on County Road 31.

Officers of the firm include the following: C. Paul Palmer, president; S. H. Friesner, general superintendent; and C. F. Heidtman, general sales manager.

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30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE March, 1924, issue of PIT AND QUARRY was to some extent a review and preview issue, containing numerous news items and short articles telling of conditions in the nonmetallic minerals industries and prospects for the year ahead. Statistics on lime production in 1923 showed total sales of 4,057,000 short tons, valued at $39,413,000. This was more than 11 percent over the volume of 1922 and only slightly less than in 1916, the record year. Ohio retained its lead as the largest producer. The output of cement in 1923 was 137,377,000 bbl., a new record, which was partly due to a sharp increase in exports in the last half of the year. Much activity was reported in the expansion of existing cement plants; a number of new plants were under construction, and others were planned.

The revival of construction of all kinds pointed to a record year for all producers of construction materials, and an open winter got the season off to an early start. A report from the U. S. Bureau of Public Roads showed that 40,000 miles of surfaced roads were completed in 1923, and funds amounting to more than $1,000,000,000 were available for new streets and roads for each of the next three years. There was evidence also that more Federal Aid funds would soon be made available to states. Total construction volume in January, 1924, set a new record which was 23 percent over the same month in 1923.

In the portland cement industry the Wabash Portland Cement Company was actively purchasing property near Osborn, Ohio, for a new plant. The Pacific Portland Cement Company was taking bids for the construction of a $1,000,000 new plant at Redwood City, Calif., on which preliminary construction was already under way. The Cement Securities Company, Denver, Colo., headed by Charles Boettcher, was reported to be negotiating for the purchase of the Monarch Cement Company, Humboldt, Kans., with announced plans to improve and expand the plant. A new plant was planned for Gaffney, S. C., by Eastern capitalists.

Only one convention was reported in this issue, that of the Indiana Crushed Stone Association, which met in Chicago. The following officers were elected: C. E. Greely, president; J. E. Baney, vice president; Fred W. Connell, secretary-treasurer. Members of the executive committee, in addition to the above, were E. B. Taylor and H. E. Blair.

One of the several outstanding new plants described in this issue was the result of an accident believed to be unique in the history of the sand-and-gravel industry. The Central Sand and Gravel Company of Memphis, Tenn., had for some years operated a modern plant on the bank of the Mississippi River, receiving material by barge from a dredge in the river. When this plant was built, reasonable investigations were made which showed the soil to be capable of supporting this weight safely. On the night of September 21, 1953, the night watchman was standing about 100 yards from the plant when he heard a cracking noise which was immediately followed by the collapse of a 50-ft.-high stiff-leg derrick used for unloading barges. The plant began sliding into the river. Not more than 5 minutes elapsed before equipment and buildings valued at $150,000 were completely obliterated. Investigation showed that there was no structural failure but a complete subsidence of the plant due to unstable soil conditions far below the level of the routine tests made.

Salvaged material and equipment cut the loss about in half and was used in building a new plant similar to the design of the old operation. This plant contained many improvements over the old; and, needless to say, it was built so as to make any similar catastrophe impossible. Operations began early in 1924. Included in the article was a complete description of this new plant.

Another article described the new 2,000-bbl. per day wet-process plant of the Hermitage Portland Cement Company at Nashville, Tenn., now owned by the Marquette Cement Manufacturing Company. Most of the major equipment was Allis-Chalmers. The plant was built under the supervision of William Fowden and D. F. Farrar. Officers of the company were John C. Vance, president; T. L. Herbert Jr., vice-president; R. D. Herbert, secretary and treasurer. R. T. Miller, manager, maintained his offices with those of the T. L. Herbert Company, large aggregate producers.

The third plant described in that issue was the new crushed stone operation of the Zenith Limestone Company at Muskogee, Okla. It included several unusual features, particularly the use of gravity for most of the material handling. The site was originally intended for a cement plant which was never built. The quarry was at a higher level than the plant, thus permitting the arrangement of the primary, secondary, and tertiary crushers down the side of the hill, with grizzlies ahead of the last two crushers to by-pass fines. A horizontal belt conveyor carried all of this material to the screenhouse on the lower level over a railroad siding. This 4,000-ton-per-day plant was designed by one of the owners, Richard D. Long, who also supervised its construction. Kennedy-Van Saun crushers and screens were used.

There were two good feature articles in this issue, one entitled *The Application of Electricity in Crushing Stone*, by E. W. Pilgrim of the General Electric Co. Every present and possible future application of electricity from the quarry through the plant was described. A staff-written article described in detail the various systems by which finished aggregates could be stored and reloaded for shipment. Special emphasis was placed on the advantages of stockpiling conveyors with tunnel reclaiming conveyors underneath the stockpile.

Potash Co. of America To Explore Canadian Lands

Under the terms of an agreement signed recently by the Saskatchewan Department of Mineral Resources and the Potash Company of America, Denver, Colo., the American concern may engage in prospecting operations in a 100,000-acre tract in the area of Princess Lake, east of Saskatoon. It is also stipulated that prospecting is to be followed by the sinking of a production shaft and "other facilities" at the minimum cost of $3,000,000.

Since April, 1952, Potash Company of America has taken out ten permits covering explorations in the area of the Saskatoon, Watrous, Quill, and Yorktown districts.

Other points in the agreement are as follows: that the $3,000,000 shaft and facilities project is to be launched by May 1, 1956; that "the expenditures" will be completed within three years of that date; and that the company will spend an additional $220,000 in exploration over a three-year period.

Potash Company of America may take a lease on a portion of the 100,000 acres (not exceeding 20,000 acres) on or before November 1, 1956, at an annual rental of $1 per acre, plus royalty on production.

Ohio Geological Survey Issues New Resource Map Of Mineral Industries

The Ohio Division of Geological Survey, Department of Natural Resources, one of the most progressive state geological surveys, recently published a new "Mineral Industry Map of Ohio", revised edition, 1953. The map is drawn on a scale of 1-in./approximately 8 mi.

The Mineral Industry Map of Ohio, first published in 1946, has been revised and re-issued. The map shows by means of appropriate symbols and state mine numbers the locations of all important mines and quarries in the following mineral industries: coal, limestone or dolomite, salt, gypsum, portland cement, sandstone, sand and gravel, and shale or clay.

The map is being distributed free of charge, together with the annual statistical report prepared by the Division of Labor Statistics and the Division of Mines of the Department of Industrial Relations. For the map and report write to the Div. of Geological Survey, Ohio Department of Natural Resources, Orton Hall, Ohio State University, Columbus.

Seattle Concern Sells Division To Building Materials Firm

Sale of the Lakeside Gravel Company's Factoria building-materials division to Galbraith & Co. was announced jointly at Seattle, Wash., by O. E. Gibson, president of the gravel concern, and B. F. Morris, president of Galbraith. Amount of the sale price was not revealed.

Mr. Gibson stated that this transaction will not affect his firm's sand, gravel, and crushed-stone business at Issaquah, nor its ready-mix operation. William H. Wood, former Factoria division manager, will continue in the same post. Harley Hanes will be his assistant.

Ohio Turnpike Commission Reports on Year's Progress

As the Ohio Turnpike Commission completed its activities for 1953, construction was under way or authorized on 237 miles of the 241-mile route of Ohio Turnpike Project No. 1 across northern Ohio, according to James W. Shocknessy, chairman of the commission.

At the close of the year costs of construction contracts were running only 2.14 percent over estimates made in 1951 by the J. E. Greiner Company, the commission's consulting engineers. Total cost of contracts awarded for the 237 miles was $211,894,154.37.

Italian Cement Production Showed Rising Trend Last Year

Italy's cement output during the first seven months of 1953 reached 4,300,000 tons, against 3,700,000 tons in the comparable period in 1952.

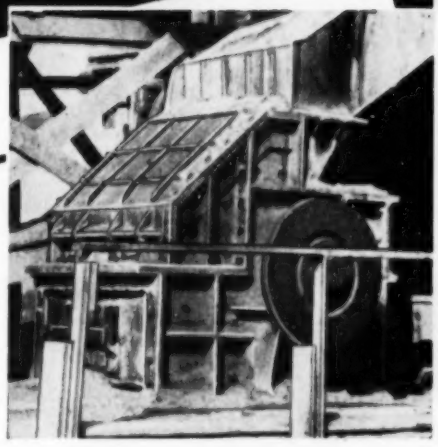
Cement consumption in the same period rose correspondingly from 3,800,000 tons in 1952 to 4,400,000 tons in 1953. New production is expected to up the 12-month total by about 1,000,000 tons. Exports amounting to 50,000 tons have been authorized for Africa and the Middle East.

ANOTHER
AMERICAN HAMMERMILL
PERFORMANCE REPORT

50,000 TONS OF -5" ROCK TO AGLIME

... WITHOUT A SINGLE REPAIR

FIELD REPORT
No. 21
Illinois Quarry



TYPE OF CRUSHER: American ACS No. 4 Up Running Hammermill.

OPERATION: Reducing minus 5" rock to agricultural limestone.

PRESENT CAPACITY: 60-120 tons per hour, depending on moisture content of stone.

PROBLEM: Very wet rock, showing 8% moisture—sticky at all times.

COMMENTS FROM USER: "Hammer wear is remarkable: 9400-9700 tons of lime ground to 100%, passing No. 8 mesh, per set of hammers . . . Remarkably efficient mill . . . meets our requirements in every way."

Write: for Bulletin No. 147 — "Better Stone Crushing"

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Originators and Manufacturers of Ring Crushers and Pulverizers
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- ✓ Combine Several Operations
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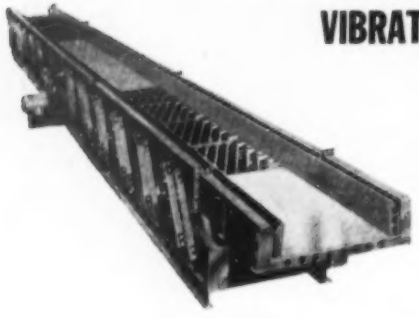
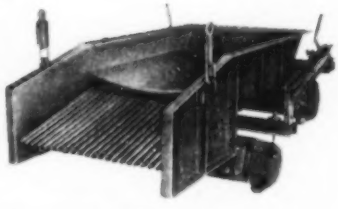


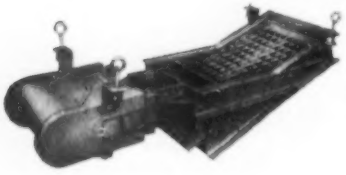
Vibratory, dual trough conveyors that screen and convey simultaneously. Energy balanced design reduces power consumption — eliminates slow downs under sudden, heavy loads. Convey, screen and distribute most materials from granules to large chunks. Flat or tubular trough models.

GRIZZLY FEEDERS

High speed — electromagnetic — for heavy tonnage feeding and scalping in one operation. Finger-tip control permits positive adjustment of feeding rate to production requirements. No mechanical wearing parts such as gears, cams, belts, etc.



SCREENING FEEDERS



Available as single or multiple electromagnetic units for extremely efficient sizing on heavy tonnage operations. Vibra-flow principle permits continuous operation at variable controlled feeding speeds.

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Personal Mention

W. F. Atkins

WILLIAM F. ATKINS has been elected vice-president and sales manager of Lehigh Materials Company, Lansford, Pa., producers of Lelite lightweight building aggregate, it was announced by Glenn O. Kidd, president of the company. Mr. Atkins was a manufacturer's agent in brick, tile, and masonry units at Erie, Pa., before joining the Lelite organization in April, 1952.

A member of the National Concrete Masonry Association, the American Society for Testing Materials, and the American Concrete Institute, Mr. Atkins has been active in research work for lightweight construction materials. Under his sales direction, Lelite has experienced a steady increase in volume.

J. R. Kringel

JOHN R. KRINGEL was recently appointed superintendent of New York Trap Rock Corporation's enlarged Haverstraw, N. Y., plant.

Mr. Kringel has had over 18 years' experience in construction and quarrying operations in this country and abroad, including the Philippines, Panama, and Australia. He replaces GREER TOMLINS, who retired on December 31, 1953.

D. A. RHOADES, vice-president and general manager of the Kaiser Aluminum & Chemical Corporation, Oakland, Calif., was re-elected president of The Aluminum Association at the three-day annual meeting held January 19-21 in New York. ARTHUR V. DAVIS, Aluminum Company of America, New York, was re-elected chairman of the board, and DONALD M. WHITE was reappointed secretary and treasurer. F. W. BOYNTON, Reynolds Metals Company, Louisville, Ky., was re-elected chairman of the Extruded Products Division.

R. C. Flood

ROBERT C. FLOOD'S promotion to sales manager for the Iowa - Wisconsin Division of the Marquette Cement Manufacturing Company was announced recently by S. L. Cribari, vice - president and director of sales. Mr. Flood fills a position left vacant since last December upon the death of O. W. Rath.

Mr. Flood has been on the sales staff of Marquette since 1946, covering northern Illinois. His new headquarters will be in Chicago.

WALLACE C. RIDDELL has been appointed special consultant to management of Kaiser Gypsum Company, Inc., and MANVEL C. DAILEY as director of research and development. Mr. Riddell was formerly director of research and development for Kaiser Gypsum at Redwood City, Calif., and was a founder of the Standard Gypsum Company, predecessor of the Kaiser Gypsum Company.

His new position at the Oakland, Calif., headquarters of Kaiser Gypsum, entails responsibility to the general manager for special development projects in all fields of the company's business.

Before joining Kaiser Gypsum last year at Redwood City, Mr. Dailey was with the United States Gypsum Company for 24 years as research supervisor in charge of gypsum and lime products development. He is the holder of many patents in the gypsum field.

WILLAM A. WILLIS has been named superintendent of Virginia-Carolina Chemical Corporation's new triple superphosphate production unit near Nichols, Fla., it was announced by Charles E. Heinrichs, vice-president of the firm.

Mr. Willis has been with V-C since 1937. He served with the purchasing, chemical control and mining departments in Richmond until his transfer to Memphis, Tenn., in 1948 as factory superintendent there. He went to Florida in the summer of 1952, when construction of the new plant got underway.

Also named to posts at the new unit were WILLIAM C. THOMAS and JOSEPH W. VENABLE, assistant superintendents; JAMES EDGAR HATCH, assitent superintendent in charge of the sulphuric acid plant; and M. J. HOUSTON, engineer.

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2 to 3½ times increased service life

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All the facts—engineering data, capacity and life comparisons, sizes available—are contained in SKF Bulletin No. 365-S. Ask your nearby SKF Distributor for a copy, or write direct to **SKF INDUSTRIES, INC.,** PHILADELPHIA 32, PA. — *manufacturers of* **SKF** *and* HESS-BRIGHT® *bearings.*

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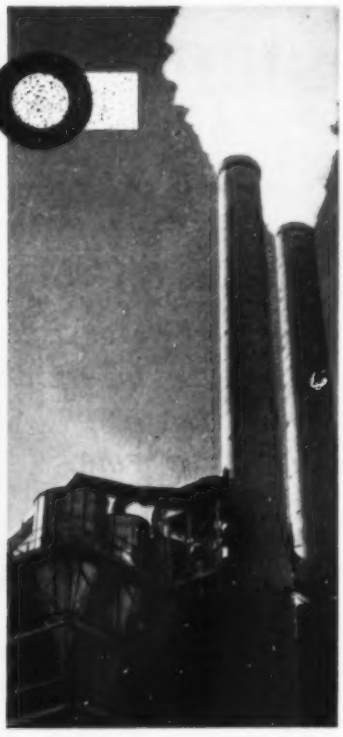
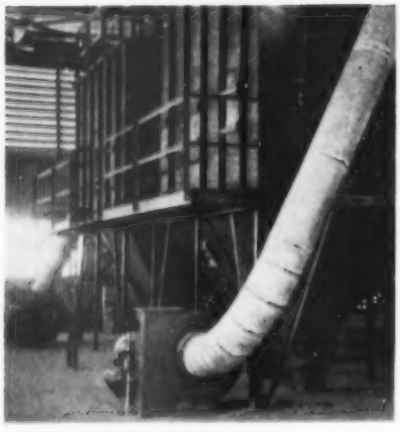


Centrifugal

Hydraulic



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ARTHUR M. REIBLING has been made local manager of North Star Cement Limited, Corner Brook, Newfoundland. After completing his studies in engineering at Bingen, Germany, and commerce at Cologne, he served from 1931 to 1936 with the

A. M. Reibling

Karl Jericho

Container Equipment Corporation in Newark, N. J., and returned to Germany in 1936. From 1936 to 1945 he was associated with various machinery manufacturing companies in Germany. In 1945 he was employed by Miag, Brunswick, manufacturers of cement plant machinery. He remained with Miag until 1952. Mr. Reibling is the holder of a number of important patents.

KARL JERICHO is mill superintendent at North Star. He studied engineering and was associated with various cement industries in Silesia, Germany, from 1927 to 1945. From 1945 to 1952 he was associated with manufacturers of cement, lime, and gypsum products in Bodenwerder, Western Germany. Since 1952 he has been associated with North Star.

R. W. LAWSON, general manager of the Consolidated Feldspar department of the Industrial Minerals Division of International Minerals and Chemical Corporation, Chicago, Ill., has been appointed administrative assistant to Norman J. Dunbeck, vice-president in charge of the division.

E. W. KOENIG has been named general manager of the department to succeed Mr. Lawson. W. BRANCH LAWSON is the new assistant manager.

CHARLES E. HUNTER, geologist, has been appointed production manager of the department, with THOMAS T. LAWSON as assistant.

KENNETH S. BATES has been appointed assistant treasurer in the Chicago office of Universal Atlas Cement Company, suceeding E. M. JOHNSON, who retired on January 31 after 47 years of service with the company. Mr. Bates will also continue general supervision of the Kansas City treasury office.

Obituaries

ARCHIBALD H. DICK, a founder of the Brazilian Portland Cement Company, died on January 16 at Richmond, Va., after a brief illness. After his graduation from Union College, Schenectady, N. Y., Mr. Dick was assigned to South America by an American firm. While he was in Brazil, he became a co-founder of that country's first foreign cement manufacturing company. He served this firm as a director and vice-president until 1946, when he retired.

ROBERT DUDLEY JACKSON, 58, a superintendent at the North Jersey Quarry Company's operation at Millington, N. J., died on January 13 as the result of a heart seizure suffered while he was returning to his home from Florida by automobile. Mrs. Jackson was driving the car.

GUSTAVE H. FAIST, vice-president and sales manager for the Gibsonburg Lime Products Company, Gibsonburg, Ohio, passed away in a Toledo hospital on October 31, 1953, after a brief illness. He was 69 years old.

Mr. Faist's entire business career was devoted to the lime industry of northwestern Ohio. In 1904 he became associated with the late J. J. Urschel, founder of The Woodville Lime Products Company. He remained with that company for 26 years and was sales manager at the time of his resignation. In 1932 he joined the late W. H. Price in the Gibsonburg Lime Products Company, becoming vice-president and sales manager.

Mr. Faist was one of the organizers of The Finishing Lime Association of Ohio in 1926, serving five years as treasurer. In 1938 he was elected president of the association and served in that capacity until his death.

MAURICE FEATHERSON, 91, president of the New York Sand and Gravel Company and of the Continental Asphalt Company, died recently in Greenwich, Conn. As a real estate broker he made a fortune before he was 35. For years he was an important figure in New York's political circles, but retired from these activities in 1910.

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Circle No. 41

● Multi-Stage Impact Breaker

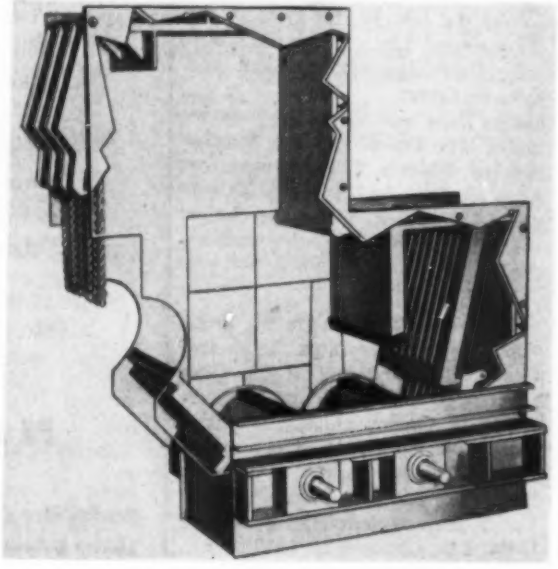
A dual motor, up-running breaker that features an entirely new concept in impact breaking has been developed by *Kennedy Van Saun*. This Cuber Senior has a multi-stage, triple action reduction principle for high capacity production of cubical material at low costs.

Designed for primary and secondary breaking, the crusher will produce a wide range of aggregate sizes with full gradation control, according to KVS. Profitable percentages of agricultural limestone can be produced simultaneously. With many types of rock, the Cuber Senior can be operated in a closed circuit to produce 100 percent passing one inch. A model 3648 Cuber Senior has a speed of 550 to 850-r.p.m. and will turn out as much as 350 t.p.h. of limestone.

The KVS multi-stage design is said to produce more effective and more versatile breaking facilities, with a greater ratio of reduction by free impact. Two massive rotors with integral hammers provide the entire rock breaking action. A low positioned feed opening makes possible direct shovel loading in portable plants or a lower truck ramp height in stationary installations.

Standing nearly 13 feet high with its feed box in place, the Senior Cuber receives the stone through the feed opening. While the incoming material is still falling it encounters the rigidly-mounted hammers of the first rotor head on and explodes along natural cleavage lines. Fragments are shot upwards into the rear of the feed box and fall back to the first rotor for a second free impact by the hammers.

Fragments from the second blow are deflected by an adjustable baffle that can be moved up and down to deflect the desired proportions of over-size material back into the hammer circle, and thus accommodate the different breaking characteristics of various type rock. The second rotor hurls the stone against the discharge grate, with finished aggregate being immediately expelled from the chamber. Oversize gets another pass at the second rotor.



● A cut-away view of the new-type impact breaker.

Circle No. 42

● New-Type Electrode

A new approach in electrode design is claimed by *Lincoln Electric* of Cleveland with the introduction of Jetweld, which incorporates powdered metal into the electrode coating in order to use arc heat more efficiently while doing extremely fast hand welding. The heavily coated ac or dc, shielded-arc electrode is for flat or near-flat positions. It meets the physical requirements of class E-7016, and is used for work formerly calling for E-6012 and E-6020 electrodes.

Circle No. 43

● Industrial Engine

Industrial power requirements in pit and quarry are met by the White Mustang engine line, built in a wide range of sizes, from 50 to 200 hp. Available with both gasoline and LPG fuel carburetion, the new Mustangs last longer in tough operation, operate at a low

maintenance cost, and give more power and higher performance at less fuel costs, White says. The line features a rigid heavy cylinder block, a cylinder distortion control method, a special water cooling system, and duplex carburetion.

Circle No. 44

Want More Information about these? Use prepaid request card on page 119.

● Split Roller Bearings

Regular anti-friction roller bearings have an added feature when made by *Cooper*, an English firm now establishing warehouse stocks and distribution in the United States. Cooper bearings are split right down to the shaft to enable their application where it would be impractical or impossible to mount solid ball or roller bearings. Made in halves throughout, the Cooper bearings come in both expansion and fixed types in a wide range of sizes. Cartridge units and pillow blocks to match are available. These split roller bearings can be used for all normal bearing duties as well.

Circle No. 45

● Improved Asphalt Plant

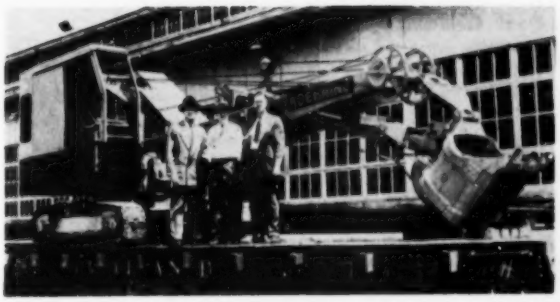
All-welded construction is among basic design changes in a new type of *Hetherington & Berner* asphalt plant which the Indianapolis firm has developed to include all the refinements and modifications that have been added to asphalt plant specifications during the last 20 years.

Bolts and rivets are eliminated to make the plant more stable and resistant to vibration, H&B says. Much of the bracing and miscellaneous loose pieces have been done away with by using welded plate construction.

Overflows are self-contained and internal in the bin, as is the dust bin. The screw conveyor that formerly fed dust into the aggregate weighbox has been eliminated. Excess screening capacity needed on some sizes is provided by a new type of Deister screen. A fugitive dust system can be installed and the plant can be made entirely dust-free.

Circle No. 46

● The new-type Hetherington & Berner asphalt-mix plant shown here features an all-welded steel construction, making it reportedly more stable and resistant to vibration. The plant also has a new-type vibrating screen.



● A view of the new Koehring model 205 shovel readied for rail shipment. Redesigned to a large extent, the new excavator features an increase of 29 percent in lifting capacity.

● Redesign Shovel

A redesigned model 205 ½-cu. yd. shovel is being produced by the *Koehring Company's* new Southern manufacturing subsidiary at Chattanooga, Tenn. A simplified upper machinery arrangement that involves only two horizontal shafts, and an increase of 29 percent in crane capacity are major features of the new excavator.

Radical changes in engineering design which have relocated the upper machinery behind the excavator's center of rotation are mainly responsible for increasing the lift capacity from 7¾ to 10 tons. The simplified design is said to make easier maintenance also.

Other improvements include fully enclosed gears, automatic brakes, a new cab design and operating lever arrangement, adjustable hook rollers, and an electric dipper trip. Self-cleaning crawlers have interchangeable shoe widths of 16, 20, and 24 in. The 205 can be built with diesel, gasoline, or electric power.

Circle No. 47

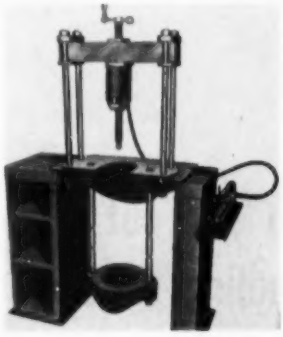
● Thermocouple Protection

The thermal conductivity and shock resistance of metal and the oxidation and deformation resistance of ceramics are combined in a new *Bristol* thermocouple protection tube. These LT-1 units resist oxidation, gases, and attack by molten steel and slag. Available in 12-, 18-, and 24-in. lengths, the metal ceramic well has a ⅛-in. wall thickness. It can be supplied in a complete thermocouple assembly.

Circle No. 48

● 30-Ton Shop Press

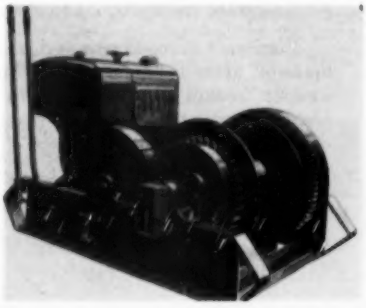
An open throat which permits easy entry and removal of work features a new 30-ton *Owatonna* shop press. The hydraulic Power-Twin center hole ram used with the press is detachable for use with pullers and push-pullers in shop or field-maintenance service. It has a remote control 10,000 p.s.i. pump. The lower press plate adjusts to three positions for fast positioning of the work.



Circle No. 49

● Car Puller

A single line pull of 12,000 lb. at 50 r.p.m. features a new car puller made by *King Mfg. Corp.* Its free-spooling cable drum has an oversize hydraulic clutch. Anti-friction bearings are used throughout to cut friction loss. A 4-cylinder Wisconsin engine powers the puller, or an electric motor can be installed.



Circle No. 50

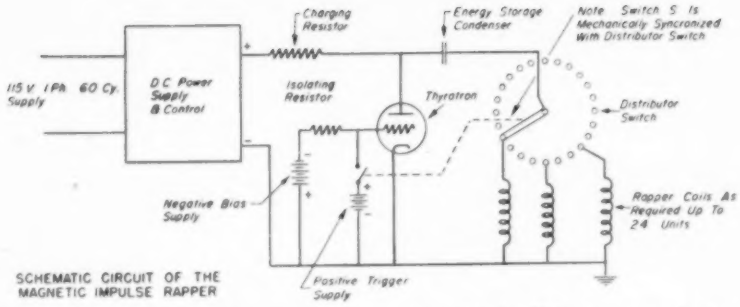
Want More Information about these? Use prepaid request card on page 119.

• Dust Collector Improved

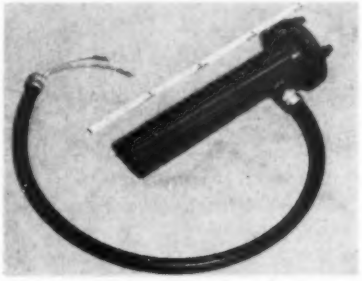
Operating costs are cut and dust collecting efficiency improved with a new electrode cleaning method developed for Cottrell electrostatic precipitators, *Research Corporation* reports. A specially-developed MI (magnetic-impulse) rapping device keeps the precipitating zone free of excessive dust pile-up.

Installed at the Mystic Wharf plant of the U. S. Gypsum Co., a new Cottrell unit uses the MI system in handling gypsum dust concentrations in gases from the rotary calciner. These range from 20 to 45 grains per cu. ft. The Cottrell cleans 40,000 c.f.m. at about 300 F. with a 5-in. vac. at a rated recovery efficiency of 99%, Research Corp. says.

Most dust in an electrostatic precipitator falls into the gravity hopper from the collector electrode. Some, however, clings to the electrode, and must be "rapped" loose by mechanical or pneumatic methods. This causes stack dust losses (rapping puffs).


Charging Resistor
Energy Storage Condenser
Note Switch S Is Mechanically Syncronized With Distributor Switch
115 V. 1Ph. 60 Cy. Supply
D.C. Power Supply & Control
Isolating Resistor
Thyratron
Distributor Switch
Negative Bias Supply
Rapper Coils As Required Up To 24 Units
Positive Trigger Supply
SCHEMATIC CIRCUIT OF THE MAGNETIC IMPULSE RAPPER

In the new system the collecting plates are grouped into banks with a bar welded horizontally along their edges. This protrudes through the precipitator wall to let individual MI rappers deliver impacts



on it and bank-rap the electrodes in each section. Each bank is automatically rapped in sequence in a fast cycle. This produces "continuous" rapping.

By presetting the frequency and intensity of the rapping, dust accumulations are automatically held to the critical level for the optimum electrical conditions in the precipitator. Rapping puffs no longer occur, more gas is cleaned with less electric consumption, and maintenance and operating costs reportedly are cut.

The light impact for this rapping technique comes from the MI units (photo), which are solenoid-actuated plungers. A 115-volt ac central pulse generator will power 24 of these, using about 300 watts. Regulating the feed to the rappers controls frequency and intensity. The rapping service is automatic once the feed controls are set. A remote control monitor can be set up in a convenient location. The pulse generator can also be used to energize the high-tension electrodes.

Circle No. 51

• Ductile Iron Bars

A new development, ductile iron bar stock, is now available, suitable for pins, bushings, shafts, bearings, seals and many other uses. Compared favorably with steel, but retaining the good qualities of cast iron, it machines well, and has "built-in lubrication" due to a graphite residue. Cast by *Howard Foundry* the bars average 100,000 p.s.i. tensile strength, 65,000 p.s.i. yield, 3½ to 4½ percent elongation and 245 Brinnell hardness. Heat treating increases elongation and hardness. Supplied in 12-in. lengths, 1¼ to 6-in. diameters.

Circle No. 52

ONE MAN CONTROL

DIGGING • HAULING
AUTOMATIC DUMPING

You can cut handling costs by using a

SAUERMAN SCRAPER

Here's How—Sauerman Scrapers move sand and gravel, ore, crushed stone, coal and other bulk material rapidly . . . . Normal operating speeds using a Sauerman Hoist are 250 fpm. on the inhaul with loaded bucket and 500 fpm. on the outhaul with empty bucket.

Its versatile working range enables you to work a small area or reach out 1,000 feet or more. Sauerman Scrapers travel across a river or wide stockpile, up to the top of a hill or down into a deep pit.

First cost is moderate and, since the scraper literally floats on the material after loading, wear is held to a minimum. The bottomless scraper bucket provides rugged durability with light weight. The result is economy in power consumption—gasoline, electric or diesel.

Add to these advantages, the labor costs of just one man—situated in a safe location overlooking the work site—controlling the entire job operation . . . and you obtain an efficient, economical installation. Sauerman Scrapers range in size from 1/5 to 15 cubic yards. Write for Catalog A: Power Drag Scrapers or Catalog E: Bulk Storage By Power Scraper.

SAUERMAN BROS., Inc.

534 S. Clinton St., Chicago 7, Ill.

ONE MAN MATERIALS HANDLING

SAUERMAN BROS., INC.

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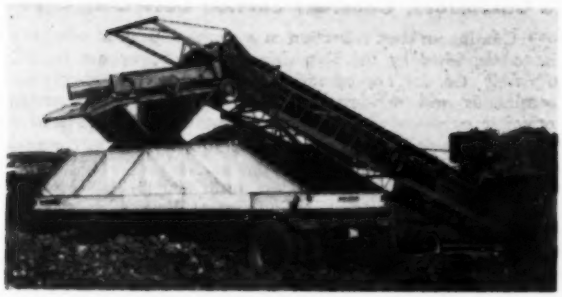
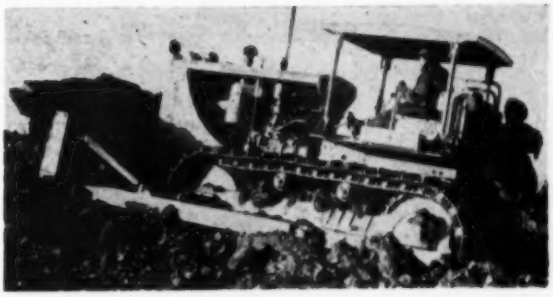


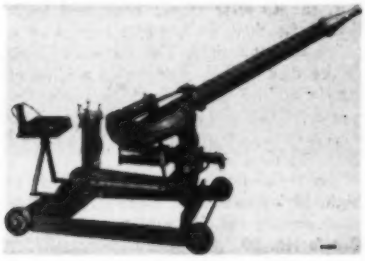
● A vibrating screen in an integral part of this Kolman portable conveyor, screening gravel and loading trucks at the rate of 800 tph. (The 50-ft. conveyor shown has a 36-in. belt and a 48-in. by 8-ft. screen). In operation, the screen is supported solely by the conveyor. It need not be removed for travel. Several size screens and conveyors are available.
Circle No. 53



● Marking its 50th year in making track-type tractors, Caterpillar Tractor Co. has announced the new D8 model shown above. Several engineering advancements, more horsepower, more weight, faster speeds (1.9 to 5.8 mph forward or reverse, with standard transmission) and the new oil-type clutch are among its features. Rated at 150 hp, it has a 185 hp, 1200 r.p.m. Cat. engine.
Circle No. 54

● Hydraulic Mining Gun

A major development in hydraulic mining offers interesting possibilities for non-metallic minerals producers in removing overburden and recovering deposits. Developed in the Alaskan gold



fields, a new type high pressure mining gun (hydraulic monitor) is said by its inventor to offer the "beginning of an answer long sought by dirt moving men using water pressure".

Already in use in the Florida phosphate fields, this gun, the *Intelligiant*, puts the forces inside the gun to work in order to provide automatic control over itself. At the same time, this harnessing of the internal velocities makes it possible to build the gun much lighter than earlier monitors, yet reduce the problems set up by unmanageable reactionary high pressure forces. Higher heads than heretofore are possible, and the gun (or a battery of guns) can be operated from a remote position by one man!

Two hydraulic cylinders give the Intelligiant its automatic control, serving as "brains" for the moving pistons. Bearings inside revolve *around* the flow of water rather than breaking the stream in the center, thus cutting friction.

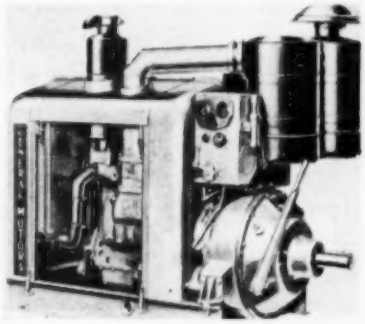
Manual hydraulic controls are built into the individual gun. Each gun has two speeds in each direction of motion — vertical (90 deg. max. angle) and tranverse (320 deg. max. angle).

Able to operate satisfactorily from 20 to 300 p.s.i. the Intelligiant can use nozzle tips up to 4½ in. One unit uses a 200-hp. motor-driven pump to jet water at 145 p.s.i. through a 2½-in. nozzle. Another, with a 1¾-in. tip jets 400 ft. at 185 p.s.i.

The Intelligiant uses no jockey box, thus reducing weight and doing away with dismantling. It is made of 14 gauge material, about the same weight as pipe. The 150 p.s.i. No. 1 gun weighs only 425 lb. Bearings are leakproof. Lubrication is done only once a month.
Circle No. 55

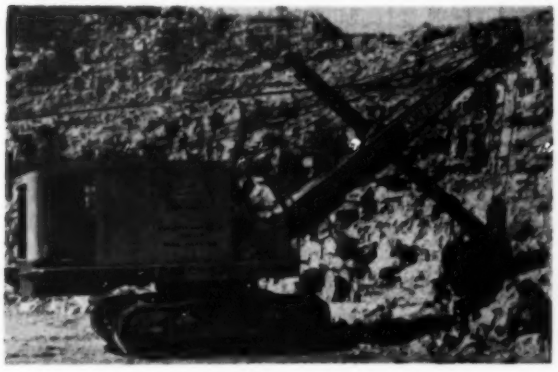
● Light Diesel Plant

A compact lightweight diesel power plant for use with crushers, small shovels, compressors, and other pit and quarry equipment has been added to the GM



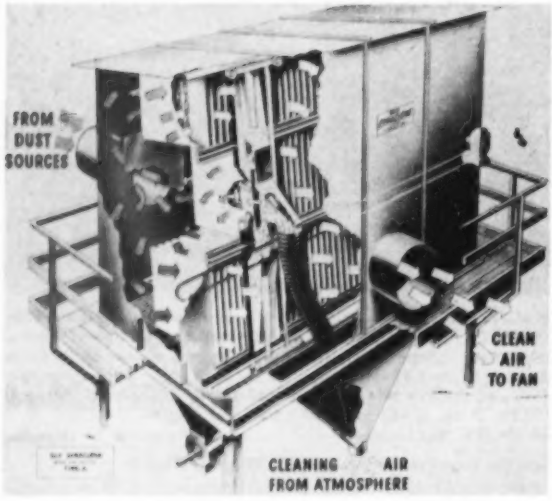
diesel line, *Detroit Diesel* has announced. The 1,450-lb. unit develops 76 b. hp. at 2,500 r.p.m. It measures 54 by 28 by 48 in., including base, radiator, air cleaners, and clutch. The elimination of valves, a pneumatic-type governor, and a lubricating pump built around the crankshaft are design features. The two-cycle, "square" engine has four in-line cylinders, and a compression ratio of 18:1.
Circle No. 56

● Three years of development has gone into this new model 750 American Hoist shovel-crane (1½-yd., 35-ton). Completely new throughout, it features single-purpose shaft assemblies for all major components, each easily removed without disturbing the others; graduated air controls; and clutches that adjust automatically. Air-friction bearings help cut operating effort as much as 60 percent.
Circle No. 57



● This one-yard Speedall loader has just been added to the Pettibone-Mulliken line. Just like its bigger brothers, it has torque converter transmission for fast, smooth, operation. The front tires stand two feet away from the truck when loading, and the bucket is seven feet high. This cuts the spotting time, PMCO says. The loader is built with gasoline or diesel power plant.
Circle No. 58

Want More Information about these? Use prepaid request card on page 119.



• Continuous, Constant Suction Dust Collection

Continuous dust collection at a constant peak of efficiency is accomplished by the Dynaclone, developed by the *W. W. Sly Mfg. Co.* for any operation that produces fine dust on a continuous and non-interruptible basis. A special operating principle prevents the built-up of dust on the cloth screen, eliminates shutting down or having to resort to mechanical shaking and flexing of the bags.

Made in sizes with capacities from 400 to 34,000 c.f.m., the Dynaclone is already handling cement, lime, mica, gypsum, magnesite, fly ash, diatomaceous earth and other products in our field. The units are compactly built. One that occupies 440 cu. ft. of space has 1188 sq. ft. of filter cloth area and an average capacity of 3000 c.f.m.

The uninterrupted operation at top efficiency is made possible by a "traveler" feature inside the collector. This uses a reverse flow of air to loosen and remove built-up dust from one bag at a time, cleaning each in turn on a continuous basis. As a result, suction remains uniform and constant in the collector for maximum dust pick-up. Because air does all the work, wear and tear to the bags from mechanical cleaning methods is reduced.

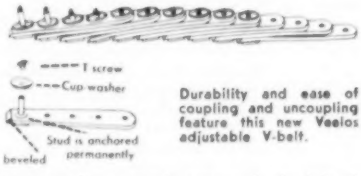
The Dynaclone principle, which can be adapted to existing Sly dust filters, operates as follows, see photo: dust-laden air (dark arrows) is drawn in and cleaned by the filter cloth. The clean air (light arrows) goes to the suction fan. Concurrently with this, the traveler moves back and forth across the dust wall, registering with a single bag at a time. The suction existing in the dust chamber draws in a blast of air from the atmosphere through the traveler (fed by rubber conduit). This causes the built-up dust layer to be blown back into the dust chamber.

The efficiency of the Dynaclone is so high, Sly reports, that there is no visible discharge at the fan outlet.

Circle No. 59

• Adjustable V-Belts

A new adjustable V-belt for D and E drives has been introduced by *Manheim Mfg. & Belting Co.* after five years of testing. Veelos TD and TE link V-belts are made up of plies of specially treated high-tensile strength canvas duck, joined by riveted studs with removable cup-washers and T-screws. Greater strength and durability at all key points, easy coupling and uncoupling, maximum flexibility for long, cool, smooth running, are major characteristics. Two types are available—regular rubber coated for general duty, and oil-proof for oily and high temperature drives. The belts feature ease of installation, long service life and full power delivery.



Durability and ease of coupling and uncoupling feature this new Veelos adjustable V-belt.

Circle No. 60

• Bag Valve Cuts Sifting

A new multiwall bag valve, designed to reduce sifting of such finely pulverized materials as hydrated lime, has been patented by *Arkell & Smiths,* Canajoharie, N. Y. Named "Lock-Rite" it will be used on pasted multiwall bags.

Circle No. 61

DON'T BUY HARDSURFACING JUST BECAUSE IT'S HIGH PRICED

THERE'S a notion that a hardsurfacing electrode must be high priced to give proper service. This is not true and here's why:

By proper combination of alloy materials plus efficient, mass manufacturing, Lincoln hardsurfacing electrodes, costing one-third as much money, produce equal and more often superior resistance to impact and abrasion.

1. LINCOLN "ABRASOWELD" sells for about 31 cents a pound.* This is only about one-third the cost of other hardsurfacing electrodes.

2. LINCOLN "FACEWELD" sells for about 70 cents a pound* . . . comparable rods cost $2.60 a pound.

Remember, in spite of these low prices, *you still get high alloy content* in Lincoln hardsurfacing . . . top resistance to impact and abrasion, which means low end-of-service cost. So why pay the high prices?

MAKE YOUR OWN COMPARISON. Try a sample order of "Abrasoweld" and "Faceweld". Your own jobs will prove that hardsurfacing costs can be cut 50 to 50 per cent!

A Hardsurfacing Expert is available in every Lincoln District Office. Ask for him to help solve your problem.

*Prices vary slightly with quantity purchased and geographical location. These prices are for moderate size.

SEND FOR NEW LINCOLN HARDSURFACING GUIDE
Gives latest data on selecting correct hardsurfacing. Available by writing on your letterhead to:

THE LINCOLN ELECTRIC COMPANY
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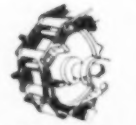
9 out of 10 problems of wear solved with only 2 ELECTRODES

Lincoln "Abrasoweld" . . . a high carbon-chromium alloy for severe impact and abrasion.

Lincoln "Faceweld" . . . has chromium carbide crystals for severe abrasion and impact.

Simplify Your Inventory. Why stock a wide variety of hardsurfacing electrodes? Lincoln's unique "Abrasoweld-Faceweld" combination is ideal for 9 out of 10 hardsurfacing jobs . . . and *saves money on every job,* as for example:



LOOK TO LINCOLN FOR LEADERSHIP
The World's Largest Manufacturer of Arc Welding Equipment

Want More Information about these? Use prepaid request card on page 119.

• Rotary Blast Hole Drill

Blast holes with diameters from 9⅞ to 12¼-in. are drilled with the new *Bucyrus-Erie* 50-R rotary drill. The highly maneuverable 56-ton unit will drill a hole about 11 feet back when its rear is parallel to the edge, or about eight feet back when the side parallels the edge. Three hydraulic jacks position the drill.

Every advantage is taken of the improved characteristics of modern motor and generator combinations to simplify

control and speed operation on the 50-R, Bucyrus-Erie says. An improved form of Ward Leonard control for the dc generators is used to govern the rotary drive and main machinery motors. This permits controlled feed and load on the drilling tools.

The pull down force is balanced to insure that sufficient air is available to remove cuttings when drilling in soft materials or that ample pressure is at hand for economical progress in hard materials, B-E says. The Ward Leonard flexibility is also available for propelling, for hoisting and lowering the derrick machinery, and for other operations.

A unique, remote-controlled, power-driven tool handling unit on the 50-R permits drill pipe to be removed or added with a minimum of physical effort. A hydraulic motor located under the drill platform uses a gear drive to swing the tool rack over the tool holder, and a chain drive to rotate the rack for storing or selecting the drill pipe.

A blast of compressed air removes the cuttings as the drilling progresses. Fines are removed by a Roto-Clone unit.

Circle No. 62

• Extends Belt Life

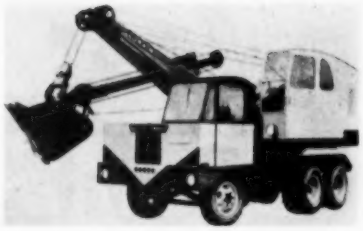
Tensile strength of conveyor belt cover has long been over-emphasized as the prime factor in belt specification, *Raybestos-Manhattan* contends, offering its newly - developed XDC belt cover. XDC is said to have greater resistance to abrasion and tearing, the two factors which R/M's Manhattan Rubber Division (Passaic, N. J.) finds causes most belt failures

Circle No. 63

• Six-Ton Truck Crane

Re-entering the small crane field, *Thew-Lorain* has introduced a 6-ton Moto-Crane to sell in the low-price bracket. Several new features have been added to the usual Lorain design. Mounted on a 3-axle carrier, the crane is fully convertible to ⅜-yd. shovel (shown), hoe, clamshell, and dragline. A 6-cylinder Ford engine gives it eight forward speeds (to 45 m.p.h.) and two reverse.

"Packaged" components highlight the turntable design. Each section can be removed easily for service or replacement. A Ford 215 engine mounted to the rear of the one-piece all-welded bed drives the



mechanism, controlled by five interchangeable friction clutch shoes on the clutch shaft just ahead of the engine.

Circle No. 64

Heavy-duty 180 h.p. front-end loader—capacity, 1⅝ to 2 cu. yd. — 4-wheel planetary drive — 4-wheel power steering—all-hydraulic operation — Pow-R-Flex twist-turn flexibility—10 equal speeds, forward or reverse—road speeds to 25 m.p.h.

Compare before you buy.

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• Scoopmobiles • Duo-Way Scoops and Lifts • Stationary Mixers
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Want More Information about these? Use prepaid request card on page 119.

Legal decisions

By **LEO T. PARKER**
Attorney at Law
Cincinnati, Ohio

Law of Fraud

It is well known, of course, that a purchaser may sue and recover damages from a seller who fraudulently induced a contract of sale. Also, the purchaser may recover "punitive" damages in addition to the ordinary financial losses he sustained as a result of the seller's fraud.

PREVENTED:
HUNDREDS OF HOURS OF
...Crusher Downtime
...Production Losses
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Manganese dipper teeth, drill rods, and other tough tool-steel parts *could* have cost this quarry operation plenty—in broken crushers, disrupted production, idle labor, costly repairs. With the RCA Metal Detector, these trouble-makers were detected and removed before they could cripple the crushers.

—with the RCA Electronic Metal Detector

Here's the tireless trouble-shooter that offers quarries thousands of dollars in savings every week in the year—the RCA Electronic Metal Detector.

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On the other hand, if a seller simply breaches a contract of sale, the purchaser's recovery of damages is limited to the actual financial losses resulting from the breach.

Hence, it is very important that all purchasers know when and under what circumstances a seller is guilty of legal fraud, instead of an ordinary breach of contract.

As above indicated, in case of fraud the court may award extraordinary damages known as punitive damages allowable if the court believes an "example" should be made of a seller who practiced fraud, malice, or deceit on the purchaser.

For example in *District Motor v. Rod.* 88 Atl. (2d) 489, it was shown that the owner of a gravel pit purchased a motor truck with a speedometer registering 50 miles. Later the purchaser learned that the speedometer had been "set back".

In subsequent litigation the higher court held that the purchaser could recover from the seller all ordinary damages he incurred plus $400 exemplary damages.

For comparison, see *Ader Motor Company v. Zimmer,* 71 S. E. (2d) 270. Here is was shown that an automobile dealer sold to one Zimmer a 1948 model motor truck which was in fact verbally represented by the dealer to be a 1949 model. The bill of sale said it was a 1949 model.

In later litigation, although the actual difference in the trade-in value of the 1948 and 1949 models was only $200, the higher court awarded Zimmer $1,000 damages, saying that punitive damages were justified. Few purchasers know that a guarantee given *after* the purchaser has accepted delivery of a machine or after he has signed the sale contract is void and has no legal effect. Otherwise, the warranty in enforceable.

For further comparison, see the case of *Saber v. G. J. C.,* 60 N. E. (2d) 224. Here the testimony showed these facts: A man named Saber purchased a thoroughly worthless reconditioned machine, believing that it was new. Saber sued the seller for the price paid for the merchandise, plus $5,000 exemplary damages.

During the trial Saber testified that the seller's representative had stated that the machine was new. The salesman denied that he so stated, but Saber proved that the seller consistently advertised that he sold only "quality" merchandise. The jury refused to allow Saber $5,000 exemplary damages, but the Supreme Court reversed its verdict and held that the jury should have decided from the testimony that the seller was guilty of deceit, fraud, and

malice because he knew or should have known that his representative had practiced fraud.

Thus, in this case, although the jury decided that the seller could not recover $5,000 punitive or exemplary damages, the Supreme Court reversed the decision. This court quoted law, as follows: "The fact that an employer retains an employee, after knowledge of the latter's wilful and malicious conduct, tends to prove ratification of the employee's act sufficient to support a verdict against the employer for punitive damages. . . ."

Therefore it is quite apparent that the courts take the view that the subsequent retention or promotion of an employee guilty of a legal wrong is "ratification" by the employer of the deceitful or fraudulent acts previously committed by the employee.

Of course, a seller never is liable for a previously honest salesman who acts without authorization or knowledge of the seller, his employer.

In the case of *Tracy v. Athens & Pomeroy*, 152 N. E. 641, the higher court said: "A principal, therefore, although of course, liable to make compensation for injuries done by his agent within the scope of his employment, cannot be held liable for exemplary or punitive damages merely by reason of wanton, appressive, or malicious intent on the part of the agent. The employer cannot be punished for the personal guilt of his servant or agent, unless the employer authorized, ratified, or participated in the wrongdoing."

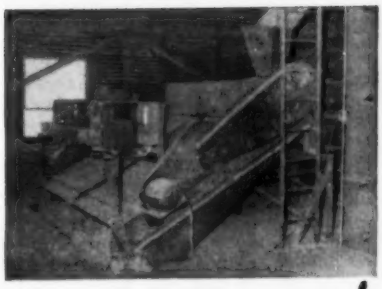
Ordinary Guarantee

Another important point of law is that no purchaser may recover punitive or exemplary damages from a seller unless he proves that the seller is guilty of fraud. At least the purchaser must introduce testimony which proves, through circumstantial evidence, that the seller committed fraud.

Hence, if a purchaser simply proves that a seller breached a valid contract of sale, he can recover only actual damages. In other words, where the purchaser merely proves that no deceit, fraud, malice, or similar unlawful influence entered into inducing him to make the contract, the court will not hold the seller liable for exemplary or punitive damages.

No Fraud

It is important to know that the higher courts hold that an employer is not always liable for statements made by salesmen. For example, if a salesman promises to return at a later date and assist a purchaser to sell merchandise, this promise is not



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legal fraud for which the employer is liable unless the purchaser proves that he was induced and caused to sign the contract when relying upon the salesman's promises.

For instance, in *Steven v. Chatfield*, 18 S. W. (2d) 1006, a purchaser signed a contract which contained a printed notification as follows: "No verbal or other agreement not appearing herein shall be binding upon the seller."

The salesman verbally stated that he would return and assist the purchaser to sell the goods. He failed to keep his promise, and the purchaser refused to pay the account, contending that the sale was induced by fraud and deceit. The seller sued to recover the contract price. Since the purchaser did not prove that he was induced by the salesman's statement to buy the goods, the court held the seller entitled to recover the contract price.

The court said: "The purchaser testified to no fraud or deceit practiced on him in order to induce him to sign the contract except that the seller never intended to carry out the alleged verbal portions of the contract to furnish service salesmen to aid and assist in effecting a sale of the purchased goods, but which, under our opinion was not the representation of a present fact so as to constitute a misrepresentation on which the defendant (purchaser) could rely, and for that reason it was not such fraud as to relieve him from his obligations under the contract."

What Is Legal Fraud?

Modern higher courts consistently hold that legal fraud has definite restrictions upon which a purchaser must rely to recover damages and other penalties from a seller.

For example, in the leading higher court case of *Kohler v. Jacobs*, 138 F. (2d) 440, the court laid down a clear set of rules as a basis for determining whether a seller can be held liable on the grounds of legal fraud.

This higher court clearly held that in order for a purchase to maintain a suit against a seller for fraud and deceit, it is necessary to allege and prove (1) that the representations were of material facts which were untrue at the time made, and were known to be untrue by the seller; (2) that they were made with the intent and design of deceiving the purchaser and to induce him to enter into the contract; (3) that the pur-

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In the photograph you see how the diagonal-ended staves of a Neff & Fry Storage Bin are laid up. They are grooved and beaded to lock together. Each course is encircled with as many galvanized steel rods as needed to withstand the thrust of the load.

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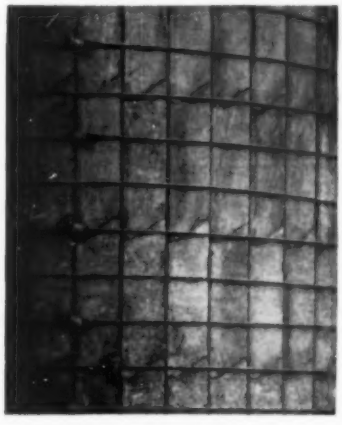

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chaser relied upon such representations and was induced thereby to sign the contract; (4) that the purchaser was thereby damaged; and (5) that the false representations were made before the contract was made or signed.

Considerable discussion has arisen over the legal question: When is a salesman's positive statement of good quality of merchandise or nonmetallic products not a legal guarantee? The answer is: When the salesman merely "puffs" the quality of the merchandise, or state his own personal opinion regarding it.

In other words, modern higher courts clearly hold that there are some statements which, even though asserted positively, are in their nature so dependent on individual opinion that the seller is not liable on a guarantee, no matter how positive his assertion. Such permissible assertions are that the merchandise is "fine" or "valuable" or "better than productions of rival makers", and the like.

See in *Mars v. Herman*, 37 Atl. (2d) 351, reported recently, and a leading higher court decision.

For comparison, see *Carter v. Seaboard Company*, 203 Pac. (2d) 758. It was shown at the time the sale was being made that the seller said: "This machine should be in good condition because of the amount of money I spent in having it repaired."

Soon after taking delivery the purchaser returned the machine to the seller because it was in poor mechanical condition. In subsequent litigation the purchaser asked the court to rescind the contract and compel the seller to return the full cash paid on the contract. He contended that the seller had breached his guarantee.

It is interesting to note that the higher court refused to hold in favor of the purchaser, holding that the seller had not guaranteed the machine. The court said: "The only statement of Brace (salesman) was that 'it should be in good condition' in view of the fact that the employer had recently spent nearly $3,000 in having it repaired. This was merely Brace's opinion, based upon expenditures for repairs, and did not form a basis for a cause of action. . . ."

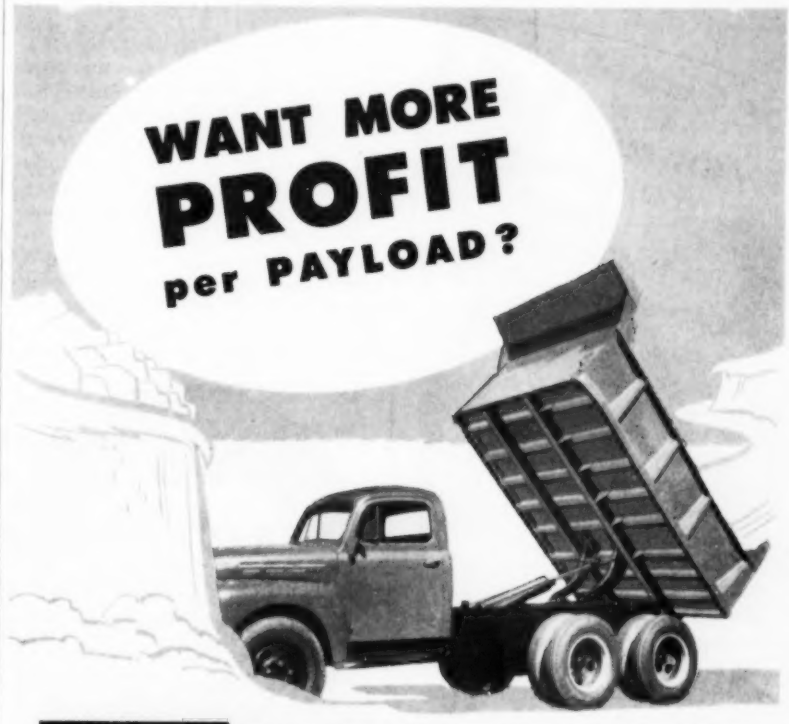
For comparison, see *Shawen v. District Motor Company*, 34 Atl. (2d) 29. Here a seller sued a purchaser for the contract price of certain equipment. The purchaser defended the suit on the grounds that the seller had breached a valid guarantee because he had stated that the equipment was the "most desirable" for the purpose. The purchaser proved that other equipment had better quality and was therefore more desirable. However, the higher court refused to hold the seller guilty of fraud or liable on a guarantee.

Law of Negotiable Notes

Recently a reader asked this question in a letter: "Is the maker of a negotiable note in payment for purchased merchandise relieved from payment if he proves that the seller practiced fraud?"

My general written answer to this reader was as follows: According to my understanding of the law, a negotiable instrument obtained by fraud can be collected if the holder in due course had no opportunity to know about the infirmities. This situation may exist, for instance, when a seller guarantees merchandise and the present holder or purchaser of the negotiable note had no knowledge, either by notification or notations, that such a guarantee or other promise was made by the seller.

An important point of law, relative to holders of negotiable notes and contracts, was decided in *Garst v. General*, 201 S. W. (2d) 757. Here it was shown that one Garst signed



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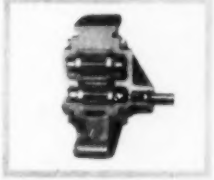


The heavy-duty roller bearing pump will lift dump loads with minimum engine power, meaning less power lost and faster operation gained.

CONVERTO MFG. CO., • Cambridge City, Indiana

a conditional sales contract having attached a negotiable note for $689.85 payable to the seller. The note provided for payment in 15 monthly installments of $45.99. This note was sold by the seller to General Purchase Corporation.

Garst refused to pay the note, contending the $146.85 was fraudulently inserted. It is interesting to observe that the higher court held that Garst must pay the full amount of the note to the General Purchase Corporation, and said: "The note was negotiable, and there is no evidence that General had knowledge of any infirmities."

For comparison, see *First National Bank of Chippewa Falls v. Buchholz*, 18 N. W. (2d) 771. Here it was shown that a building owner signed a written sales contract for the purchase of building material. The building owner paid $400 down and executed notes payable to the seller for the balance payable in monthly installments. Immediately thereafter the seller assigned the contract and notes to a bank.

The written contract contained a guarantee clause which the buyer claimed that the seller had breached. The purchaser refused to pay the balance due, and the bank filed suit to collect the amount due on the notes. The bank defended the suit on the grounds that it knew nothing about the guarantee given the building owner by the seller. However, the higher court decided that the bank assumed exactly the same liability on the guarantee as the seller.

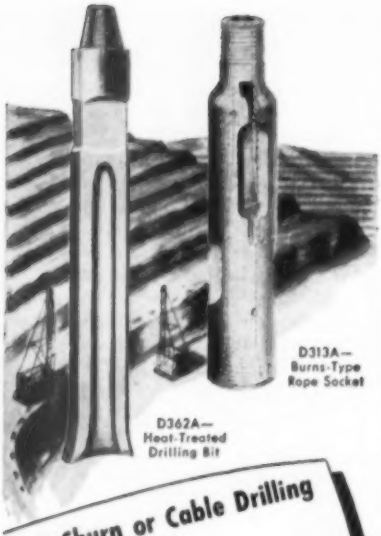
This court said: ". . . . Where one takes as endorsee and assignee a promissory note and a sales contract representing a transaction for which the note was given and before the consideration has passed, he takes such note with notice of a condition to liability on the instrument . . ."

Hence, in this case the court held that since the guarantee was included in the contract, attached to the notes, the bank knew the exact agreement between the buyer and seller and hence automatically became liable.

Oral Promise

Another important point of law is that a negotiable note never is affected by an oral agreement.

For example, in *Kins v. Garner*, 261 S. W. (2d) 266, these facts were established: A dealer sold to a purchaser named Kins for $5,100 old equipment that had little value except as scrap. Kins paid $100 in cash and gave a note to the seller for the balance of $5,000. The note



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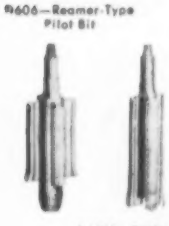

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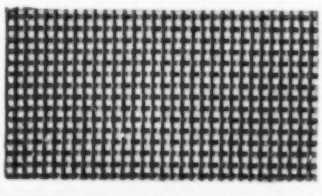

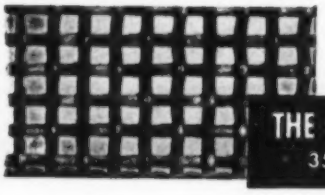

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THE CLEVELAND WIRE CLOTH & MFG. CO.
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was negotiable, payable in monthly installments of $100. Kins refused to pay the note, and the seller filed suit to collect $5,000 from Kins.

During the trial Kins proved that at the time the sale of the old equipment was made the seller orally assured him that he (Kins) would not be personally liable on the notes. In other words, the note was to be paid only from the proceeds derived from the resale of equipment as junk or salvage. Kins argued that since the material had not brought $5,000 as junk, he need not pay the note.

The lower court held Kins not bound to pay the $5,000 note, but the higher court reversed the verdict, and said: "It has been a characteristic of negotiable instruments that they are not to be encumbered by collateral conditions. The parol agreement relied upon was ineffective as a matter of substantive law."

Therefore the law is established that a negotiable note is collectible irrespective of oral or verbal agreement made by the maker. Readers interested in similar suits should read higher court cases, as follows: *Smith v. McLaughlin*, 179 S. W. 496; *Page v. Oates*, 109 S. W. (2d) 661; *Fee-Crayton Hardwood Lumber Company v. Hogan*, 143 S. W. 585; *Harmon v. Harmon*, 199 S. W. 553.

Safety Drive Cuts Damage By 85% for Colorado Firm

Thirteen was no unlucky number at a gathering arranged recently in Pueblo, Colo., by Fountain Sand and Gravel Company officials. Company truck drivers numbering 13 were feted at a luncheon and some were presented with safe-driving awards.

According to Joseph Bullen Jr., general manager, property damage has been reduced 85 percent since the firm initiated its safety drive two years ago. All employees of the company are enlisted, one "team" being pitted against a second, and points are awarded for avoidance of accidents, care of equipment, and courtesy to customers.

Operations of Two Companies Merged at Albuquerque, N.M.

A merger of two Albuquerque concerns was consummated recently when the Albuquerque Gravel Products Company acquired the Alexander Sand and Gravel Company, formerly owned and operated by L. D. Alexander. All assets and equipment of his company were included in the transaction, according to Ward Anderson, secretary-treasurer of Albuquerque Gravel Products.

Mr. Alexander, who was associated with Albuquerque Gravel Products before forming his own business, has been named manager of the company's aggregate plant.

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(no hand truckers need apply)

With the POWER-CURVE-LOADER on the job your bags flow swiftly all the way from packing station to loading spot inside box car or truck without a hand laid on 'em! Cut loading crews to one or two men.

Swing it left or right while running

Finger-tip controls make it self-propelled—self-retracting and reversible. Stackers never lift a bag ... merely swing them from discharge plate to the stack.

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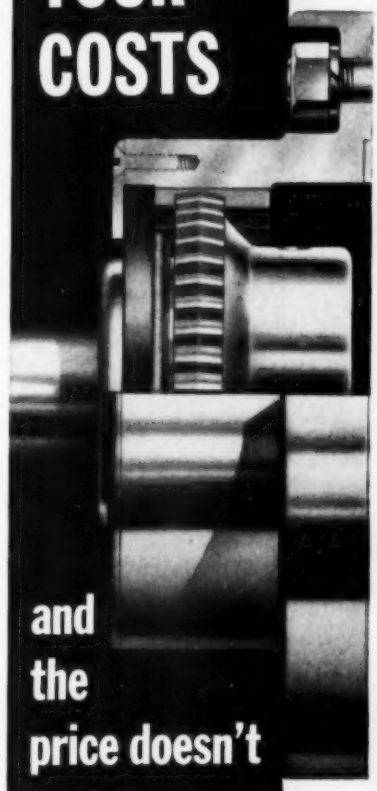

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• Your phone starts ringing every time you have a breakdown in your yard. Delivery is held up, production stops, men are laid off. Add up those costs and the extra price of Ajax Dihedral Couplings is insignificant. They handle misalignment heretofore considered excessive.

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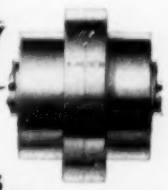

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RUGGED AND DEPENDABLE AT low cost

• Salem type buckets

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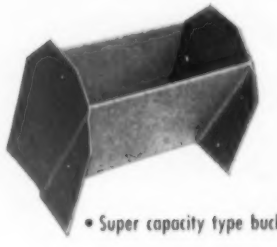

• Super capacity type buckets

Standard high quality steel elevator buckets are available in all styles, types, sizes and gauges for replacement as well as new installations. For real economy and immediate service, get acquainted with the Standard line today.

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traffic news

CENTRAL TERRITORY RAILROADS

Freight Traffic Committee

Docket 90196 (1) — Proposed to establish on crushed stone and crushed stone screenings, in bulk, in open-top cars, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from St. Paul, Ind., to the following points:

Anderson and New Castle, Ind.	$1.53
Crawfordsville and Muncie, Ind.	1.65
Columbus, Ind.	1.16
Goshen, Ind.	2.01
Lawrenceburg, Ind.	1.46
Marion and Winchester, Ind.	1.77
Rushville, Ind.	1.09

Docket 90205 (1) — Proposed to establish on limestone, natural, ground or pulverized (unburned) stone screenings, crushed, not ground or pulverized (unburned), stone dust (unburned), carload, minimum weight 30 tons, from Piqua, Ohio, to Meade and Pound, Va., open cars, 334 cents per net ton; closed cars, $3.84 per net ton. Rates will also apply on limestone, ground or pulverized, when containing not in excess of 3 percent of other minerals, either physically or otherwise added.

Docket 90231 (1) — Establish on stone, crushed, in bulk, in open-top cars, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Georgia, Ind., to Madison, Ind., 177 cents net ton.

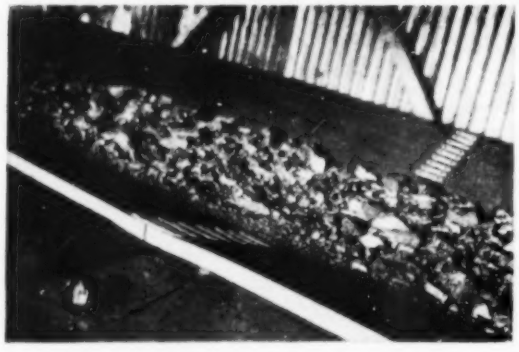
EASTERN RAILROADS

General Freight Traffic Committee

Bulletin C 1606-3 (Increase-Carrier)—To amend item 4850-A, Supplement 15, Central Territory Railroad tariff 347-G-ICC 4460 applying

FLEXCO®

BELT FASTENERS and RIP PLATES



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★ FLEXCO Fasteners make tight butt joints of great strength and durability.
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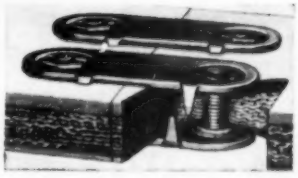


Compression Grip distributes strain over whole plate area

Order From Your Supply House. Ask for Bulletin F-100

FLEXIBLE STEEL LACING CO., 4623 Lexington St., Chicago 44, Ill.

on dolomite, roasted, etc., minimum weight 90 percent of marked capacity of car, from Bettsville, Maple Grove, Millersville, Gibsonburg, Martin, Narlo, Woodville, and Durbin, Ohio, to Thetford Mines, Quebec, to reflect the proper basis of 22½ percent of the basic first class rate plus ExParte 162-C, 166-D, 168-B, and 175-B increases.

Bulletin C 1609-9 (Shipper)—Proposed to establish rates on stone (that is, fluxing, foundry, melting or refractory), unburned, in bulk, carload, minimum weight 90 percent of marked capacity of car, from Bedford and Bloomington, Ind., district to Owensboro and Steelton, Ky., $2.62 per net ton in open-top cars and $3.11 per net ton in closed cars. Subject to ExParte 175-B increase.

Bulletin C 1624-6 (Shipper)—Proposed to establish on magnesite, calcined, carload, minimum weight 40 tons, $28.73 per net ton from St. Louis, Mich., to Edmonton, Alta. Not subject to ExParte 175-B increase.

NORTH PACIFIC COAST FREIGHT BUREAU AND PACIFIC SOUTHCOAST FREIGHT BUREAU

Docket JT 2838 (S)—Proposed to request rate of $10 per net ton on rock, perlite, carload, Pioche and Castleton, Nev., to Vancouver, B. C., minimum 50 tons.

Docket X JT 2855 (S)—Request rate of 48 cents, minimum 50 tons, on lime, common, hydrated, quick or slaked, as described in item 7390-B Pacific Southcoast Freight Bureau 1-S, carload, from Sloan and Henderson, Nev., to Pacific Northwest points to Oregon and Washington.

Docket X Jt 2865 (S)—Request rate of 33 cents, minimum 50 tons, on lime, common, carload, from Diamond Springs, Calif., to West Linn, Ore.

Docket JT 2874 (S)—Request rate of 64 cents per hundredweight on magnesite, carload, from Salinas, Calif., to Anacortes, Wash., minimum 30 tons.

PACIFIC SOUTHCOAST FREIGHT BUREAU

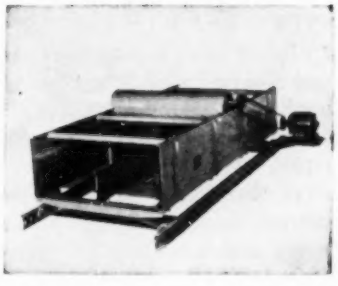
Docket 4376 (S)—Request rates of 24 cents, minimum 85,000 lb., and 33 cents, minimum 40,000 lb., on plaster, plasterboard, and related commodities, carload, from Los Angeles, Calif., to East Stockton, Calif.

Docket 4388 (S)—Request rates of 38 cents, minimum 30 tons, and 50 cents, minimum 30,000 lb., on lime, common, carload from Diamond

GET THE FACTS ON BETTER SCREENING IN UNIVERSAL'S NEW CATALOG NO. 150!

Here's up-to-date information on the best in modern screening equipment. You will want a copy of this new catalog on screens and screening for your file!

UNIVERSAL HIGH-SPEED VIBRATING SCREENS ARE YOUR BEST ASSURANCE OF DEPENDABLE SCREENING AT THE LOWEST POSSIBLE COST.



From feed to discharge end, a Universal has the same intense vibratory action over every inch of the screening surface. That means more screening area working for you, and more production per square foot.

Write today for your free copy of catalog #150!

UNIVERSAL VIBRATING SCREEN CO.

RACINE — WISCONSIN

TO CUT TRUCKING COSTS

TandemTrac

The ALL NEW TANDEM you can AFFORD

LOW INITIAL COST
LOW OPERATING COST
LOW MAINTENANCE COST

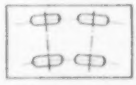
Learn how these (and many other) features can boost ton-mile profits

FOR
TRAILING OR PUSHER AXLES
DUAL DRIVE TANDEMS
TRAILER TANDEM AXLES

VARIABLE RATE SPRINGS

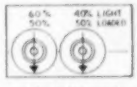
Flat-leaf, progressive springing means empty vehicle gets smooth, resilient ride. Maximum payloads get full, graduated suspension. Load and body damage goes down, ton-mile profits go up.

AUTOMATIC TRACKING



TandemTrac automatically guides wheels around highway curves, aligns them on the straightaway. Unbelievable tire life, greater fuel mileage, mean money saved on all hauling jobs.

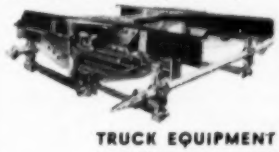
AUTOMATIC LOAD DISTRIBUTION



On trailing and pusher axles TandemTrac puts 60% of the load on the drive axle for empty-truck traction, splits full legal payloads 50-50, automatically. Trailers or dual drives get constant 50-50 ratio.

• • •

Get the whole story of the first new idea in tandem suspensions in 20 years. You can't afford not to . . . you can afford TandemTrac. Write or mail the coupon today.



TRUCK EQUIPMENT CO. INC.
1787 Fillmore Ave., Buffalo 14, N.Y.

Gentlemen:
Please send literature describing the new TandemTrac Suspension.

NAME _____ TITLE _____
FIRM _____
NATURE OF BUSINESS _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

X . . . chosen by
MODERN QUARRY OPERATORS

"Cape Ann"
FORGED
STEEL DROP BALL

RUGGED DESIGN
GREATER IMPACT
ECONOMICAL

The "Cape Ann" Drop Ball is a sure winner because it provides top serviceability at minimum cost.

Strong alloy steel pin. Forged connecting link, protected by deep recess, adaptable for swivel or shackle. Minimum cable replacements. Furnished complete as shown.

2000 to 8000 lbs.

Write for full details

Cape Ann Anchor & Forge Co.
Gloucester • Massachusetts

Springs, Calif., to Salt Lake City, Utah.

Docket 4422 (S)—Request rates on lime, common, carload, from Sloan and Henderson, Nev., to northern California points, minimum 15 tons:

Santa Rosa	43 cents
Ukiah	47 cents
Eureka*	40 cents
Vallejo	40 cents
Benecia	38 cents
Marysville	41 cents
Tehama	46 cents
Red Bluff	47 cents
Redding*	50 cents
Dunsmuir	52 cents
Yreka	56 cents

*Also to Eureka, 46 cents and Redding 40 cents, minimum 30 tons.

SOUTHWESTERN FREIGHT BUREAU

Docket 67110 (S)—Proposed to establish rate of $4.64 per net ton on perlite rock, broken, crushed, or ground, dried or not dried, not expanded, carload, minimum weight marked capacity of car, but not less than 40 tons, from Florence, Colo., to Socorro, N. M. Not subject to X-162-6-8 increases.

Docket 67128 (S)—Amend A.T. &S.F. 5645-Q by establishing carload rate of 291 cents per net ton on sand and gravel, also stone, Chunky, Tex., to South Spring, N. M. Not subject to X-162-6-8 increases.

TRUNK LINE TERRITORY RAILROADS

Freight Traffic Committee

Bulletin N 4609-1 (Shipper)—Proposed to establish on limestone, crude, fluxing, foundry, or furnace, in open-top equipment, carload, minimum weight 90 percent of marked capacity of car, from White Pigment Corporation Siding, Pa., to Fairless, Pa., $1.87 per gross ton. Subject to ExParte 175-B increase.

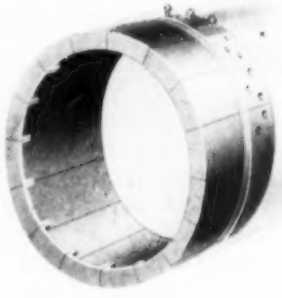
Bulletin N 4609 M-2 (Carrier)—Proposed to establish on limestone, natural, ground, or pulverized, in closed cars, carload, minimum weight 40 tons, from Patterson, N. Y., to Montgomery and Shandaken, N. Y., $1.40 per net ton. Subject to ExParte 175-B increase; issued to meet motor truck competition.

Bulletin N 4613-2 (Shipper)—Proposed to establish rate of $2.92 per net ton on stone, rip rap, in open-top cars, carload, minimum weight 90 percent of marked capacity of car, from Oriskany Falls, N. Y., to Wellsville and Scio, N. Y. Subject to ExParte 175-B increase.

PYRASTEEL

SEGMENTAL KILN ENDS FOR CEMENT PLANTS
. . proven satisfactory in THOUSANDS of Installations

Avoid burnouts and shutdowns, and insure years of continuous service, by equipping your kilns, both feed and discharge ends, with PYRASTEEL Segmental Kiln Ends.
PYRASTEEL is equally effective and economical in many other high-heat applications, including clinker coolers, conveyor screws, feed pipes, and drag chains.
Over three-quarters of the annual cement output is produced in plants using either or both of our alloys, PYRASTEEL and EVANSTEEL.



PYRASTEEL KILN END,
Discharge end

Unit Segments are easy to install or replace

Write for PYRASTEEL Bulletin

CHICAGO STEEL FOUNDRY CO.
Kedzie Avenue and 37th Street • Chicago 32, Illinois
Makers of Alloy Steel for Over 45 Years

trade notes

The board of directors of Stephenson-Adamson Manufacturing Co., Aurora, Ill., has selected R. W. Brauer and D. L. Stephens as vice-presidents. Mr. Brauer has been with the company for 25 years and is presently plant manager. Mr. Stephens leaves his post as treasurer to organize a new division for merchandising the company's line of Standard Products.

R. S. Wells was elected secretary, E. T. Rollins as treasurer, and F. P. Keine, assistant secretary and assistant treasurer.

C. L. Kenny, former manager of the Horizontal Braided Hose Department of Quaker Rubber Corp., Division of H. K. Porter Co., Inc., Philadelphia, Pa., has been appointed as manager of products. He will coordinate the activities of the factory with those of the sales force.

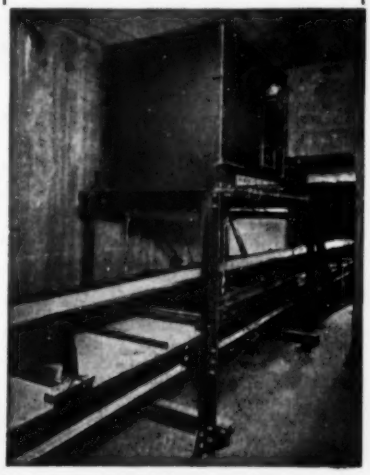
M. Nielsen, vice-president of The Babcock & Wilcox Co., New York, has been elected a member of the board of directors and placed in charge of the Boiler Division.

W. D. Sullivan, former regional manager of the Boiler Division's manufacturing department, has been elected a vice-president and placed in charge of the department, succeeding Mr. Nielsen.

M. Nielsen

W. D. Sullivan

WEIGH WHILE YOU CONVEY



Be sure of your production figures in belt conveying bulk materials. Ideally suited for all producers of lime, cement, sand, gravel and other bulk materials that require handling by belt conveyor.

The Merrick Weightometer accurately and automatically weighs and records a continuous flow of material passing over the conveyor belt without any interruption to the conveyor operation.

Write us today for full details.

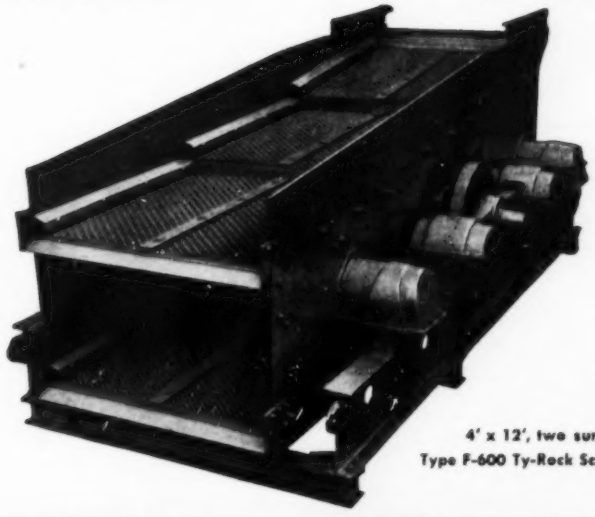
MERRICK SCALE MFG. CO.

100 Autumn St. Passaic, N. J.

YOU CAN DEPEND ON

TY-ROCK SCREENS

BALANCED RUGGED

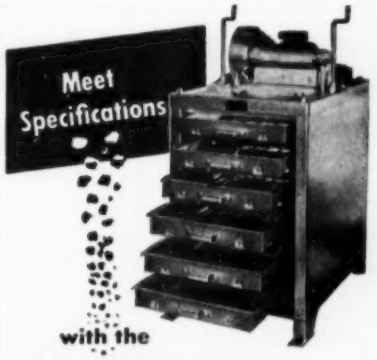


4' x 12', two surface
Type F-600 Ty-Rock Screen

THE W. S. TYLER COMPANY

CLEVELAND 14, OHIO

Manufacturers of Woven Wire Screens and Screening Machinery



with the

Gilson Testing Screen

The GILSON Screen cuts out error and guesswork in meeting sizing specifications for crushed stone, gravel, slag, coal, ores, and similar materials.

You can own and maintain a GILSON Screen for only 65-cents per 1,000-tons production in your plant, according to our sales and service records.

For Research Projects, too — the GILSON Screen is the answer to moderate-scale mass separation jobs.

WHY THE GILSON SCREEN?

1. Makes test quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
4. Trays balanced to same tare weight
5. Visible separation to refusal
6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

GILSON SCREEN CO.

BOX 186 · MERCER, PENNA.

ON SPRAGUE & HENWOOD'S

CONTRACT Diamond Core Drilling OPERATIONS

ANY KIND - ANY TIME ANYWHERE

For more than sixty years Sprague & Henwood, Inc. has been a leader in the field of Contract Diamond Drilling. During this long period our crews have completed thousands of contracts successfully in every corner of the globe — under every conceivable operating condition.

From shallow holes to depths of more than a mile — in regions so remote that men and equipment were delivered by float planes — from barges on lakes and rivers — in mountain terrain so wild that mule-back transportation was required — from the blazing tropics to the sub-zero arctic — our crews have overcome every difficulty and completed their assignments to the customer's satisfaction.

Today, we have a large force of experienced operators and supervisors and an ample supply of modern equipment for every drilling requirement, so that we can undertake almost any job — anywhere — on very short notice.

Besides exploratory drilling for coal and ore, from the surface or underground, our contract service includes blast-hole drilling, directional drilling, foundation test drilling, grout holes and pressure grouting. Estimates, and constructive suggestions whenever possible, submitted promptly on request.

SPRAGUE & HENWOOD, INC.
SCRANTON 2, PA.

Manufacturers, also, of high-speed diamond drilling machines, diamond bits and complete accessory equipment. Write for catalog.

BRANCH OFFICES: NEW YORK - PHILA. - PITTSBURGH - GRAND JUNCTION, COL. - BUCHANS, NEWFOUNDLAND

SPEED + PRECISION + ECONOMY

WEIGHING
BLENDING
FEEDING
MIXING
RECORDING
PROPORTIONING

SCHAFFER POIDOMETERS

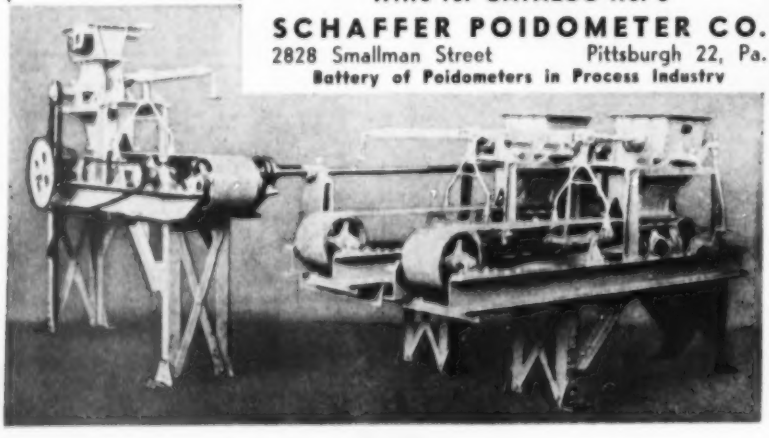
provides *plus* performance for bulk material processors.

Handling every scaling function automatically, these modern units step up production, maintain product uniformity, and reduce costs. Designed and constructed for maximum service under all operating conditions.

Available with remote control weighing and recording devices, and with total weight recorders.

Write for CATALOG No. 5

SCHAFFER POIDOMETER CO.
2828 Smallman Street Pittsburgh 22, Pa.



Battery of Poidometers in Process Industry

A. G. Lundgren has been elected a vice-president of The Thew Shovel Co., Lorain, Ohio. He started to work at Thew as a timekeeper in 1911 and has been a director of the company and director of purchases since 1946.

A. G. Lundgren

Garvin Pelsue

Garvin Pelsue, former manager of plant operations, has been elected vice-president in charge of plant operations of the Jaeger Machine Co., Columbus, Ohio.

Harold C. Osborne has been named manager of industrial equipment sales for the Export Division of American Brake Shoe Co., New York. Robert Beecken was appointed manager of railway product sales, and Franklin M. Simpson manager of automotive equipment sales.

Philip A. Larnino has been appointed manager of manufacturing of The Four Wheel Drive Auto Co., Clintonville, Wis.

Miss Irene Dennery has been appointed advertising and sales promotion manager for NOPCO Chemical Co., Harrison, N. J. She is well known in advertising circles in Philadelphia and is one of the founders of the Industrial Marketeers of the New Jersey Chapter, National Industrial Advertisers Association.

Miss Irene Dennery

Robert C. Brigleb

Robert C. Brigleb has been appointed assistant sales manager, jobber replacement sales, by The S. K. Wellman Co., Bedford, Ohio. He has been associated with sales to automotive replacement jobbers, original assembly manufacturers, or parts production for the last 15 years.

LUBRIPLATE No 630-AA IS PRACTICALLY A UNIVERSAL LUBRICANT

—says

THE SPOKANE PORTLAND CEMENT CO.

"With the introduction of LUBRIPLATE No. 630-AA, we were able to satisfy all our needs for solid type lubricants with only two LUBRIPLATE Products. LUBRIPLATE No. 630-AA might almost be considered a universal lubricant. Furthermore, it has effected marked savings in both lubricants and labor!"

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

J. E. Fitzsinmmons, multiwall sales representative for Union Bag and Paper Corp., New York, has been transferred from the Chicago office

J. E. Fitzsimmons

D. W. Rauch

to Detroit, Mich. His territory includes Michigan and Indiana.

D. W. Rauch, formerly of the company's Chicago office, will be multiwall sales representative in Wisconsin and Illinois.

Neil E. Salsich, vice-president and director of the Jeffery Manufacturing Co., Columbus, Ohio, died suddenly on February 2 in Bethlehem, Pa., where he was to have met with Bethlehem Steel Co. officials. He was 70 years old.

Frank Skidmore, formerly secretary-treasurer and general manager of Contractors' Equipment and Supply Co., Albuquerque, N. M., has been appointed director of industry relations of Associated Equipment Distributors, a national association of construction equipment distributors and manufacturers.

In his new capacity, Mr. Skidmore will concentrate his activities on distributor-manufacturer relations, customer relations, distributor-management methods, and other programs carried on by the association.

Denver Equipment Co., Denver, Colo., has opened a new office in Salt Lake City, Utah. J. G. Uzelac, who has been manager of the Chi-

J. E. Uzelac

Keith Wick

cago office for several years, will head this new office.

Keith Wick, formerly sales manager in the Denver office, has taken over the Chicago territory.

CYCLONE TOOLS for Cable Drills

NEW

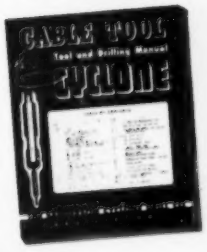
SUPERLOY Alloy Bits

The Right Ruggedness For Rock

Order Your Trial Pair Today!

NOW, a completely new alloy of steel makes possible improved *alloy bits at popular prices.* This outstanding development, plus special Cyclone heat treatment, gives new Superloy *Alloy* Bits more holes per shift, more footage per dressing. Made to fit all makes of tools — with perfect fitting joint *guaranteed.*

FREE COMPLETE INFORMATION



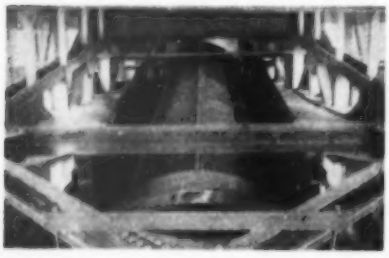
Our new, complete and compact tool manual and catalog with simplified, consolidated specification tables. Every current tool illustrated with use instructions. Separate section on all drilling procedures, including bit treatment. Write for your copy today.

COMPLETE LINE OF HIGHEST QUALITY CABLE TOOLS FOR BIG BLAST HOLES, SAMPLING AND PROSPECTING.

CYCLONE

THE SANDERSON CYCLONE DRILL CO.
ORRVILLE • OHIO

YUBA Bucket Ladder Dredges for dredging placer properties including rare earths, etc.; handling sand and gravel, dam construction, channel changes, etc., Bucket sizes: 2½ to 18 cu. ft. or larger. Digging depths below water as required.



YUBA Abrasion Resisting Steel Screens—Flat or revolving for separating, scrubbing, sizing. Holes taper drilled to prevent clogging. All thicknesses from ¼" up; other dimensions as needed. U·S·S· AR plate carried in stock.

Stockton "Yubabilt" Clamshell Buckets, for channel, harbor and reclamation dredging. Two types: California and Power Arm (shown here). Three weight classes: heavy, standard, special light weight. ½ to 6 cu. yds.

YUBA DREDGES — PROVED DEPENDABILITY AROUND THE WORLD

57

YUBA MANUFACTURING CO.

Room 718 • 351 California St. • San Francisco 4, Calif.

William E. Smith, former manager of North American industrial sales for The Dorr Co., Engineers, Stamford, Conn., has been named assistant sales manager, with headquarters at the home office. He is succeeded by Glenn O. Wilson, manager of the Western Industrial Division in Denver, Colo. William T. Marston takes over Mr. Wilson's position in Denver.

A manufacturing agreement has been concluded between the Babcock and Wilcox Co. of New York and the Seaboard Refractories Co., Raritan Township, N. J., under which Seabord's entire manufacturing facilities will be devoted to producing special refractories for Babcock and Wilcox. Seaboard will discontinue its own sales activities, and future sales will be handled by B. & W.

Blaw-Knox Co., Pittsburgh, Pa., has announced the completion of its negotiations to acquire the All Purpose Spreader Company of Elyria, Ohio, including the firm's line of highway construction equipment. Sales and distribution of the newly-acquired machines will be coordinated with other Blaw-Knox highway equipment.

Timken Roller Bearing De Mexico is a new company formed to handle the sale of products manufactured by the Timken Roller Bearing Co., Canton, Ohio. Sales offices and warehouse facilities of the new company are located in Mexico City.

A. E. Porter, who has represented The Timken Co. in Mexico for several years, has been appointed manager of the new company. He will be assisted by four sales engineers.

Charles Almy, co-founder of the Dewey and Almy Chemical Co., Cambridge, Mass., died recently in Boston at the age of 65. Mr. Almy, who retired December 31 of last year, had been a consultant to the company for the last five years, following his resignation as executive vice-president in 1948.

John E. Goodman, former assistant treasurer of Hercules Powder Co., Wilmington, Del., has been elected treasurer, succeeding Francis J. Kennerley.

John M. Martin, general manager of the Explosives Department, and John R. L. Johnson Jr., director of the legal department, were elected directors of the company to fill the vacancies created by the retirement of Mr. Kennerley and William R. Ellis, vice-president.

IT COSTS NO MORE — TO USE THE BEST

REPLACE WITH

"Indian Brand"

MANGANESE STEEL
Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.
ESTABLISHED 1881

FARREL-BACON JAW CRUSHERS
SIZES 60"x48" to 10"x7"

Optional design features include: (1) Meehanite frame, sectionalized when necessary; (2) removable water-cooled bearings; (3) improved design of swing-jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive. *Write for further details or engineering assistance.*

FARREL-BACON
ANSONIA, CONNECTICUT

Stop Effects of SHOCK!

Sinclair HEAVY DUTY BEARING GREASE is a greatly improved lubricant for bearings in power shovels, drag lines, tipples, conveyors and similar heavy duty equipment. It cuts wear by resisting shock, heavy loads, heat and pounding. It stays put – successfully lubricates large, loose-fitting bearings.

Sinclair GEAR PROTECTIVE COMPOUND provides a new high standard in exposed gear lubrication. Extreme pressure additives carry heavier loads – protect against wear. Moreover, this compound stays put, resists throw-off, squeeze-out or peeling.

Sinclair JET LUBRICANT #20 can prolong the working life of your turntables, rollers and roller rails. It is an all-season lubricant that resists squeeze-out – protects costly parts against shock and heavy, constant loads.

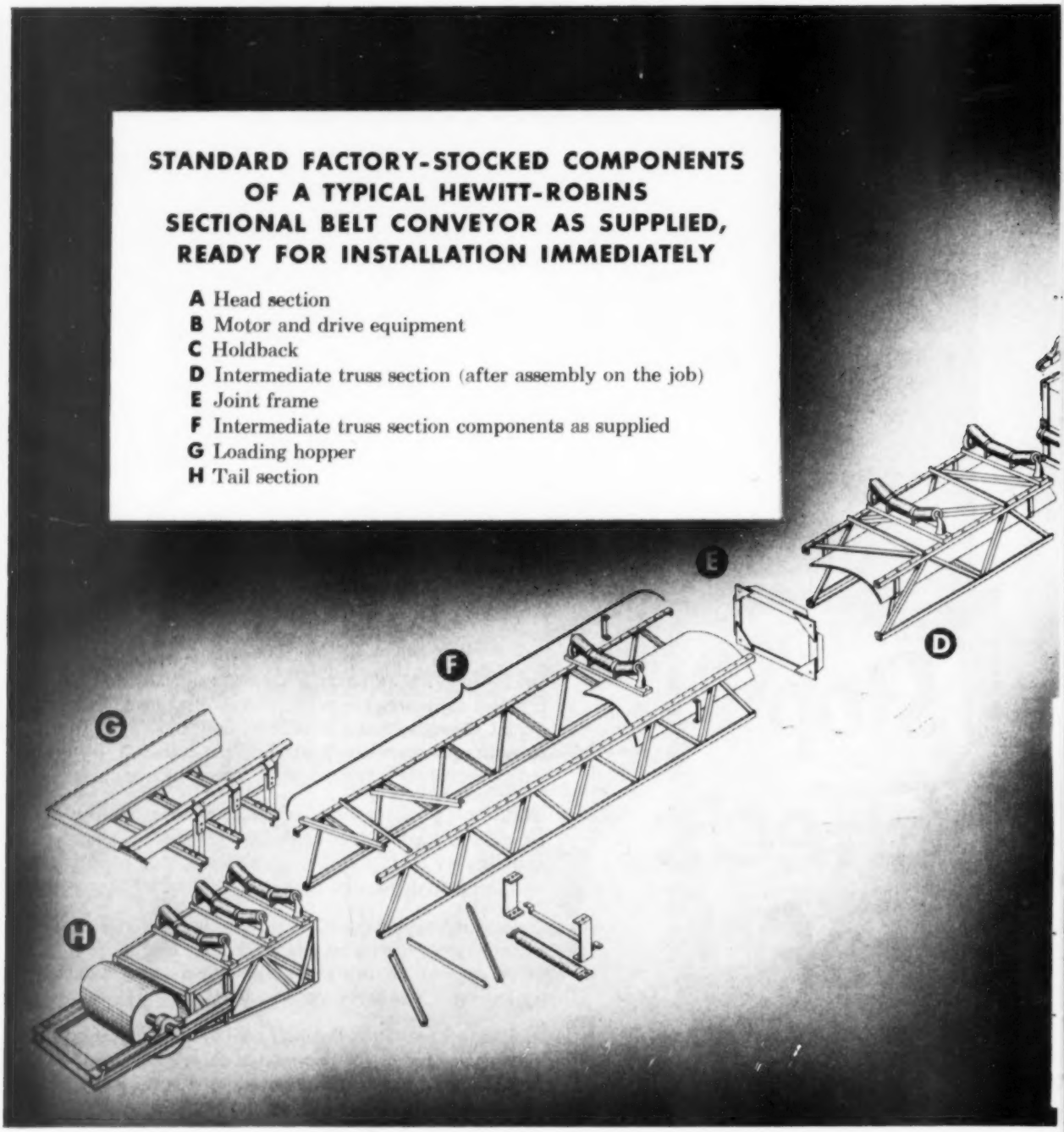
A Sinclair Lubrication Engineer can give you expert counsel on how you can get the most out of these cost cutting, time saving lubricants. Phone your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, New York.

SINCLAIR LUBRICANTS

Order Your Belt Conveyor

STANDARD FACTORY-STOCKED COMPONENTS OF A TYPICAL HEWITT-ROBINS SECTIONAL BELT CONVEYOR AS SUPPLIED, READY FOR INSTALLATION IMMEDIATELY

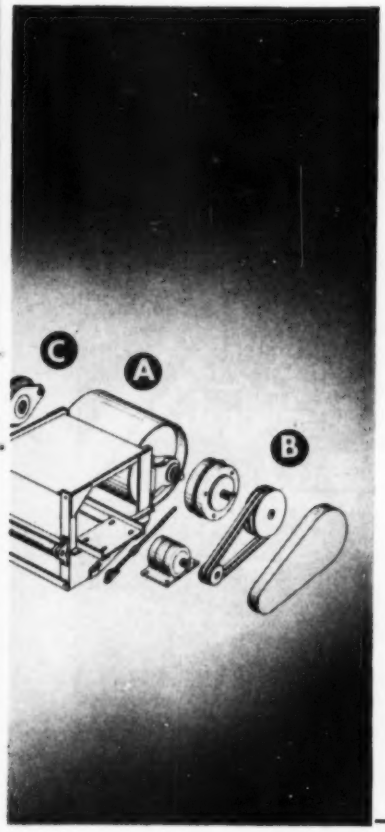
- **A** Head section
- **B** Motor and drive equipment
- **C** Holdback
- **D** Intermediate truss section (after assembly on the job)
- **E** Joint frame
- **F** Intermediate truss section components as supplied
- **G** Loading hopper
- **H** Tail section



HEWITT-ROBINS

EXECUTIVE OFFICES, STAMFORD, CONNECTICUT

Right From Factory Stock



Save Time and Money . . . Install your own Hewitt-Robins Sectional Belt Conveyor from Easy-to-assemble Factory-built Components

Now, for the convenience of large and small plant operators alike—Hewitt-Robins offers a standardized sectional conveyor adaptable to a wide variety of uses.

Hewitt-Robins Sectional Conveyors consist of completely assembled factory-stocked components that can be quickly and economically installed and maintained by your own personnel.

When you order a Hewitt-Robins Sectional Conveyor you can be sure of prompt delivery . . . all components and parts from machinery to belting are shipped to you direct from standard factory stocks . . . saves you time and saves you money.

For prompt information about the Sectional Conveyor and any other Hewitt-Robins bulk material handling products, contact the Hewitt-Robins office nearest you or write direct to Passaic, New Jersey.

ENGINEERING DATA

APPLICATION: Designed to handle bulk and packaged materials where special limitations and conditions do not require the use of custom-engineered belt conveyors.

MATERIALS HANDLED: Sand, gravel, run-of-mine ore, coke, stone, coal, gypsum, grain, sugar beets and any other bulk materials that can be handled more efficiently and economically by belt conveyor.

CAPACITIES: From 20 to 500 TPH at belt speeds from 200 to 450 feet per minute.

STANDARD WIDTHS: 18", 24", 30", 36".

LENGTH: From 15'6" up to any length consistent with good conveyor practice . . . inclines up to 22½°.

STANDARD HORSEPOWER: From 2 to 30 hp.

IDLERS: 4" or 5" diameter troughing and return idlers available. Both types have exclusive Hewitt-Robins patented Triple Grease Seal and one-shot lubrication.

BELTING: Complete selection of all Hewitt-Robins standard stocked belts. Special belts available when necessary.

INSTALLATION: All standard factory-assembled components are clearly labeled and shipped with complete instructions, for quick, easy assembly by your own personnel.

Write for Bulletin #132-B on your company letterhead

Here is a partial list of* HEWITT-ROBINS PRODUCTS *that will help you cut handling costs and increase operating efficiency

MACHINERY:

- Belt Conveyors
- Belt & Bucket Elevators
- Car Shakeouts
- Screen Cloth
- Vibrating Conveyors & Screens

INDUSTRIAL RUBBER PRODUCTS:

BELTING:

- Conveyor
- Elevator
- Transmission

HOSE:

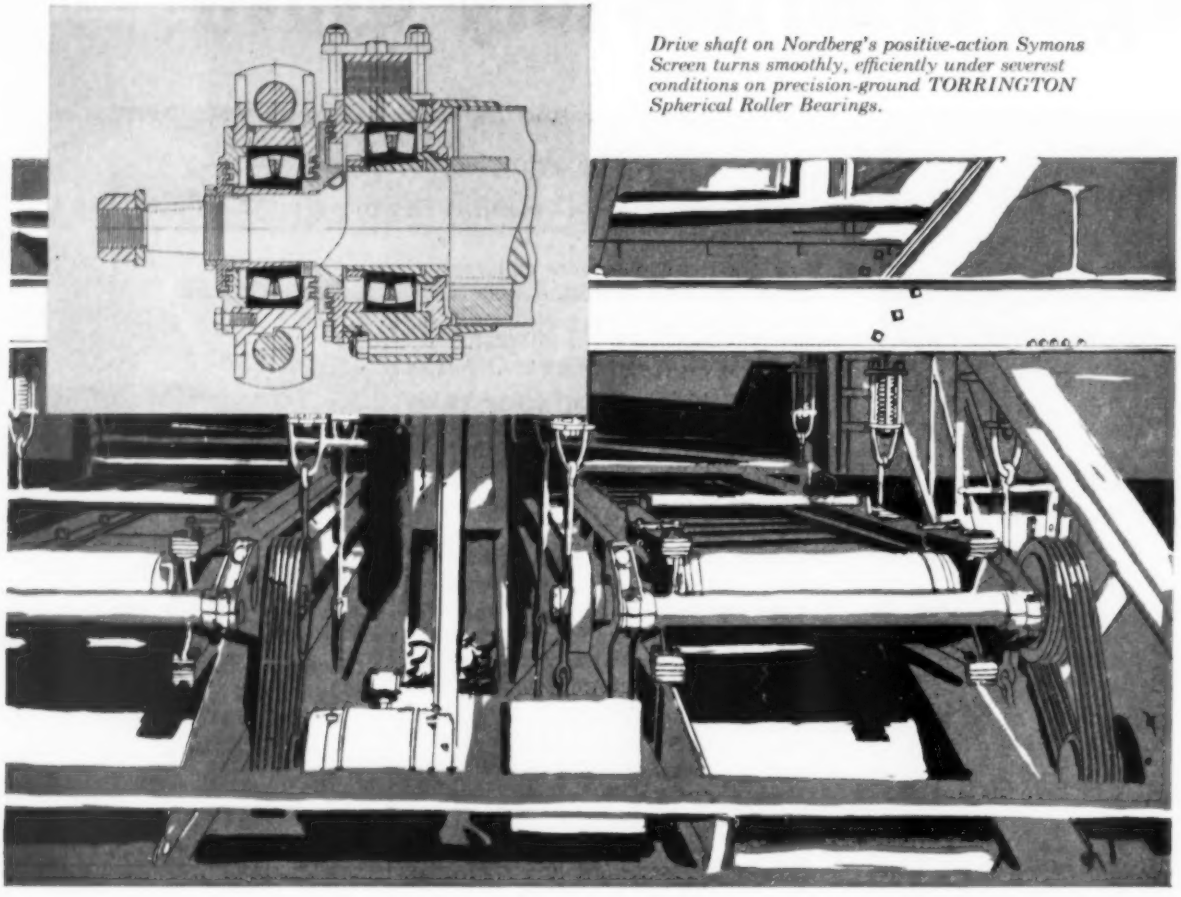
Hewitt-Robins makes over 1,000 different types of industrial rubber hose, including Twin-Weld®, the patented twin-line welding hose.

For information and service on industrial rubber products, contact your Hewitt-Robins Industrial Supply Distributor. Through his complete stock of Hewitt-Robins Rubber Products, and his familiarity with local field conditions, he can fill your supply needs promptly and correctly. See Classified Phone Book for the Hewitt-Robins Industrial Supply Distributor serving your area.

INCORPORATED

DOMESTIC DIVISIONS: Hewitt Rubber • Robins Conveyors • Robins Engineers • Restfoam

FOREIGN SUBSIDIARIES: Hewitt-Robins (Canada) Ltd., Montreal • Hewitt-Robins Internationale, Paris, France • Robins Conveyors (S. A.) Ltd., Johannesburg • **EXPORT DEPARTMENT:** New York City.



Drive shaft on Nordberg's positive-action Symons Screen turns smoothly, efficiently under severest conditions on precision-ground TORRINGTON Spherical Roller Bearings.

Only the best pass these tests!

Bearing applications in the rock processing industry are about as tough as they come. That's why you find so many screens and crushers, mills and pulverizers equipped with TORRINGTON Spherical Roller Bearings.

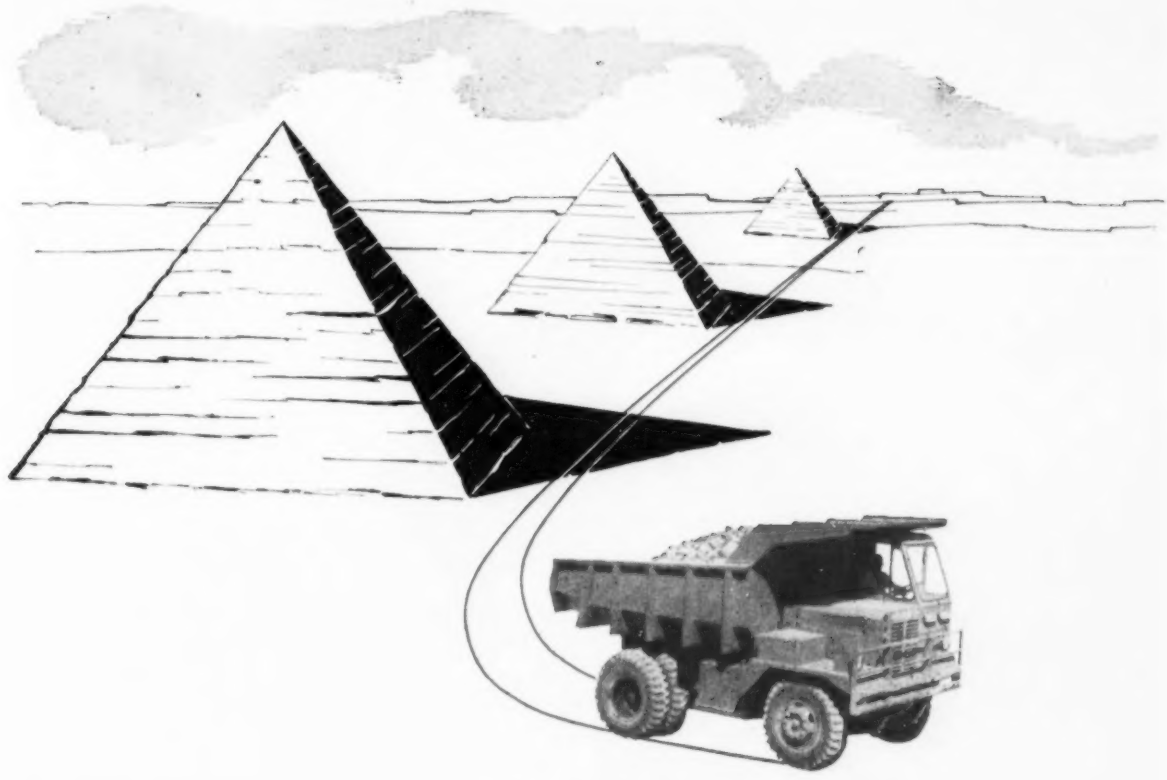
TORRINGTON Spherical Roller Bearings have the special features that make the difference: Accurate geometrical conformity between races and rollers—for maximum capacity at all times. Self-alignment—for free-rolling service even under eccentric loading. Contact surfaces precision ground from highest top-quality steels—for minimum friction, maximum life. Thorough heat treating—for uniform hardness of all load-bearing parts. One piece, solid bronze cage for each path of rollers—for freedom of operation.

TORRINGTON Spherical Roller Bearings are available from stock with either straight or tapered bore. Try them in your own processing equipment—see for yourself that it pays!

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

TORRINGTON SPHERICAL ROLLER BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers



The Pharaohs would have loved it!

In the great pyramid of Cheops (built around 5000 years ago) there's enough material to build a rock wall all around the country of France. Imagine what Cheops would have done for some of today's modern equipment!

During 51 years of truck-building experience, DART'S newest 10-tonner is truly a giant in its class! It possesses a combination of engineering features unheard of until now—long, low stressed, 2-stage springs, front and rear, for proper shock absorbing qualities, loaded or unloaded; short wheel base (it turns in a radius less than 20') ; interchangeable tires all around; improved driver visibility and plenty of power for the toughest operations (156 H.P. Diesel).

Your operation may not be the building of pyramids (481 ft. high) but whatever conditions you face, no matter how rugged they are, the new DART 10-S can meet your requirements of service, economy and low initial cost.

For price and complete specifications on DART TRUCKS, see your local dealer, or write to DART TRUCK COMPANY. Models from 10 to 75 ton capacity.

DART TRUCKS
Kansas City 8 Missouri
SUBSIDIARY OF THE CARLISLE CORPORATION

Men and corporations in the excavating or material handling business today need the very best, most efficient tools they can get.

They need a good name behind their equipment, too, for maintenance and service are a real, inevitable part of our mechanical age.

How GOOD can a machine be? MARION, since 1884, has tried to build the best machines possible within the limits of being practical. Not the cheapest machines, but the best. Not to meet a price, but to do a job.

Any MARION representative can show you how this policy has paid dividends for owners throughout the world in terms of dependable, profitable work over long periods of time.

The thousands of MARION machines in service today and the good friends MARION has in many important industries have helped strengthen our convictions that there will always be a market for machines backed by a good company name.

Write for a copy of our new catalog, No. 403, giving condensed specifications on the complete line of MARION machines.

MARION

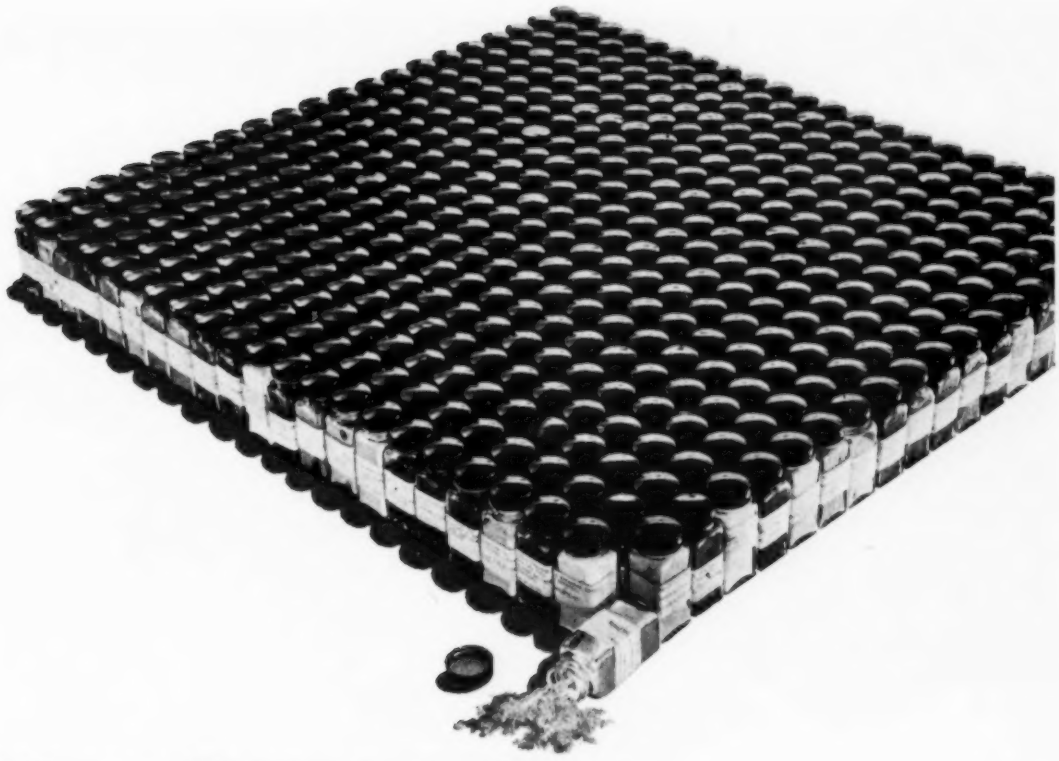
POWER SHOVEL CO.

MARION, OHIO, U. S. A.

70 YEARS OF MODERN MACHINES

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

from ¾ cu. yd. to 45 cu. yds.



Bottles of pure profit

These bottles contain samples of dust from literally hundreds of processing plants.

Naturally, because each bottle contained a different combination of dust, it presented a different dust collection problem . . . over 600 of them in the last 3 years!

From knowledge gained by planning, designing, and building dust collection equipment *tailored* to hundreds of different operating conditions . . . Buell has built an unmatched background of reliable and accurate knowledge and experience. From this knowledge, *gained the hard way*, Buell has developed three basic systems of industrial dust collection . . . made dozens of exclusive improvements in equipment.

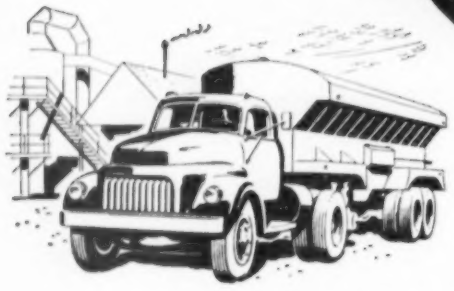
Be sure you, too, have the latest facts. Send for your complimentary copy of our brochure – The Collection and Recovery of Industrial Dust. Write Buell Engineering Company, Dept. 184, 70 Pine Street, New York 5, New York.

buell®

MECHANICAL ELECTRICAL

20 Years of Engineered Efficiency in
DUST COLLECTION SYSTEMS

Exclusive Eaton Features add up to Longer Axle Life, Rugged Dependability, Minimum Shop Time, Lower Maintenance Cost



More than two million Eaton Axles in trucks today. For complete information, see your truck dealer.

Eaton's planetary gearing distributes pressure and wear over a number of small gears, resulting in lower unit stress. Forced-flow oiling system provides positive lubrication to all moving axle parts at slowest vehicle speeds. Extra heavy construction eliminates the possibility of distortion or misalignment under full loads. Practical, down-to-earth design makes maintenance quick, easy, economical. Simple shifting makes it easy for drivers to use all available gear ratios. The right ratio for every road and load condition; gives extra maneuverability, positive control at all times. The result of these Eaton features is long, trouble-free axle life, greatest possible vehicle utility at lowest possible cost.

EATON
2-Speed Truck
AXLES

Axle Division
EATON MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

JEFFREY VIBRATING FEEDERS
assure steady flow

Acme's Jeffrey-Traylor Vibrating Feeder

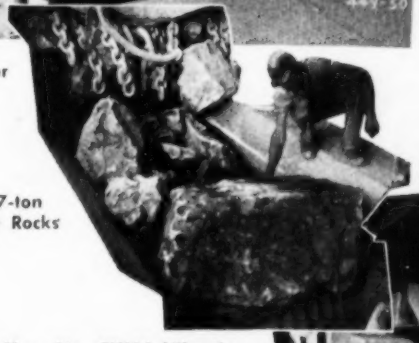
Acme Installation Handles Millions of Tons of Rock With Finger-tip Control

The Jeffrey-Traylor electric vibrating primary feeder shown here keeps even 7-ton blocks of quarry-run rock moving smoothly into the primary jaw crusher at the Acme Limestone Co. plant, Fort Spring, W. Va.

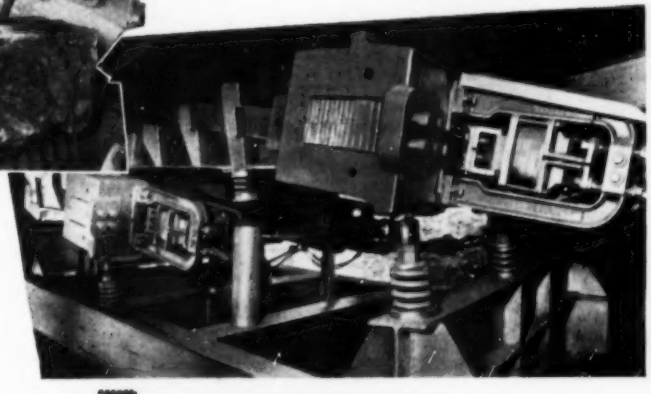
The feeder is 5′ wide by 11′, 6″, powered by four Jeffrey-Traylor electric vibrators, with the operator maintaining precise load control by simply turning a rheostat knob. Rock comes off a single stone deep.

More than a million tons of crushed stone have been handled on one mild steel feeder deck. Acme reports, "This machine was operated throughout last season without any change or one cent of maintenance. It meets every requirement 100 per cent."

Write for Catalog 830.



Handles 7-ton Limestone Rocks



Jeffrey No. 5HM4 Vibrating Units Give Fixed Flow

Jeffrey-Traylor vibrating feeders deliver the load *when* and *where* you want it. Our engineers will gladly show you how.

THE JEFFREY MANUFACTURING CO.

ESTABLISHED 1877

Columbus 16, Ohio

sales offices and distributors in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

IF IT'S MINED, PROCESSED OR MOVED
. . .IT'S A JOB FOR JEFFREY!

They're licked before they start

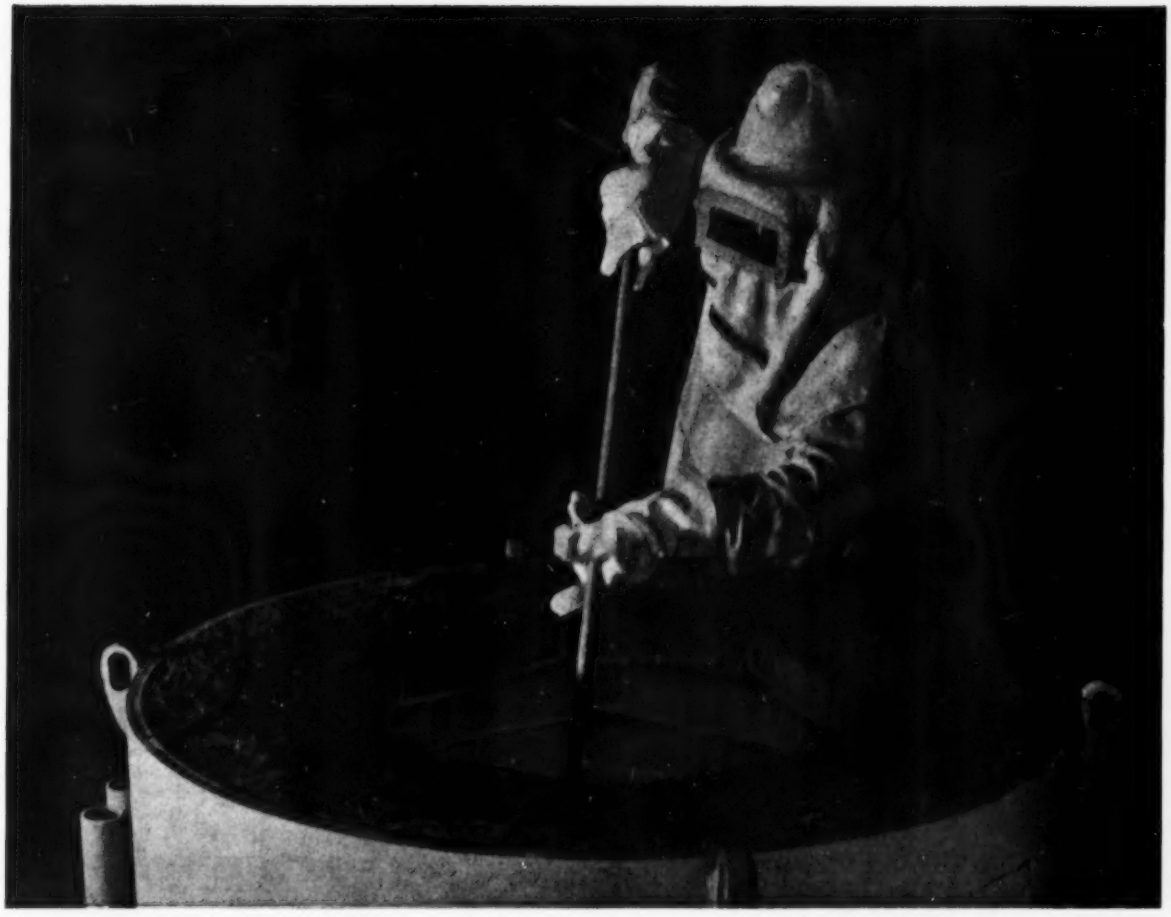
Super-Tempered Precision Space Screens defy Abrasion, Vibration and Fatigue to do their worst. These durable screens stay tight and give extra long wear on the most punishing jobs because they're made of hard and tough super-tempered steel wire that's precision crimped and woven on powerful hydraulic machines.

Specify Super-Tempered Precision Space Screens and find out how they save you money in less downtime and longer life; greater tonnage output at lower cost. To order, write or phone our nearest sales office.

WICKWIRE SPENCER STEEL DIVISION, Atlanta • Boston • Buffalo
Chicago • Detroit • New Orleans • New York • Philadelphia
THE COLORADO FUEL AND IRON CORPORATION, Denver, Colorado
PACIFIC COAST DIVISION, Oakland, California

SUPER-TEMPERED
PRECISION SPACE SCREENS CF&I
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

1941



Refractory test furnace shown above is the only one of its kind in the industry. Temperatures up to 3180°F. check Permanente Periclase-Chrome brick for deflection, resistance to thermal shock and chemical attack—only three of 86 rigid tests for quality!

86 RIGID TESTS ASSURE LONGER HOT ZONE LIFE

WITH PERMANENTE PERICLASE-CHROME BRICK!

If you are looking for ways to get longer hot zone lining life from your rotary cement kiln, take a look at this fact:

> **Permanente Periclase-Chrome brick must meet at least 86 tests for quality and performance—far more than required for any other brick available today!**

The superior quality of Permanente Periclase-Chrome brick is increasing clinker production in kilns all over the country. One large cement producer reports:

> **"With the whole length of the burning zone lined with Permanente brick . . . the lining will last 9 to 12 months—as much as 4 times longer than with the other brick used."**

If an appraisal of your kiln performance would be helpful, our engineers will be glad to work with you.

SEND FOR BOOKLET giving installation procedures and for descriptive literature. Standard brick shapes available, both burned and chemically bonded. Installation service at no extra cost. Call or write principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California; First National Tower, Akron 8, Ohio.

Kaiser Chemicals

Pioneers in Modern Basic Refractories

Basic Refractory Bricks and Ramming Materials • Dolomite • Magnesia • Magnesite • Alumina • Periclase

CHECK 'EM OFF

THE INSIDE REASONS FOR MACK'S STAND-OUT $$$ EARNING POWER

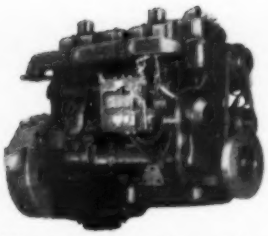
Keeping going under conditions that stop other trucks cold—carrying big payloads . . . on fast schedules . . . in the roughest operations—that's what points up the ability of Mack trucks to build greater profits for you.

WHEREVER YOU SEE A TOUGH JOB . . .
THERE IS WHERE YOU SEE MACKS

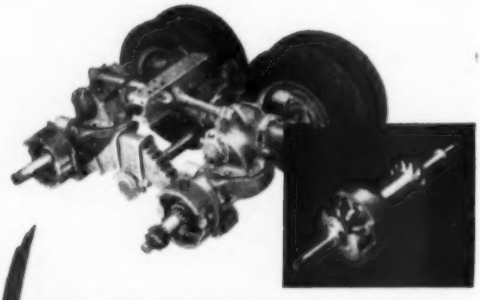
Mack TRUCKS

Mack Trucks, Empire State Building, New York 1, N.Y. Factory Branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

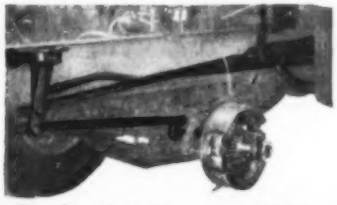
3277



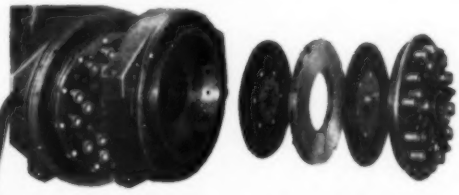
✓ ***Plentiful Horsepower.*** Mack provides the right powerplant, gasoline or diesel, to haul most efficiently, most profitably for each specific operation. Complete range of engine options up to 400 horsepower. Coupled with the most rugged transmission or torque converters yet developed.



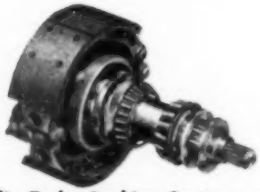
✓ ***Balanced Bogie With Power-Divider.*** Only Mack six-wheelers offer the unique advantage of Mack's Balanced Bogie, incorporating the exclusive Power-Divider. With the Mack Power-Divider torque is distributed between bogie axles in proportion to traction, thus enabling Macks to pull through where other trucks mire in.



✓ ***Power-Steering.*** Hydraulic power-steering permits effortless, fast steering and positive, shockless control.



✓ ***Air-Assist Clutch.*** Operation of the big, double-plate clutch is virtually effortless, reduces driver fatigue.



✓ ***Hydraulic Turbo-Braking Systems*** and powerful air-actuated brakes provide utmost safety for downhill going, assure safe and positive driver control at all times.

meeting every digging requirement...

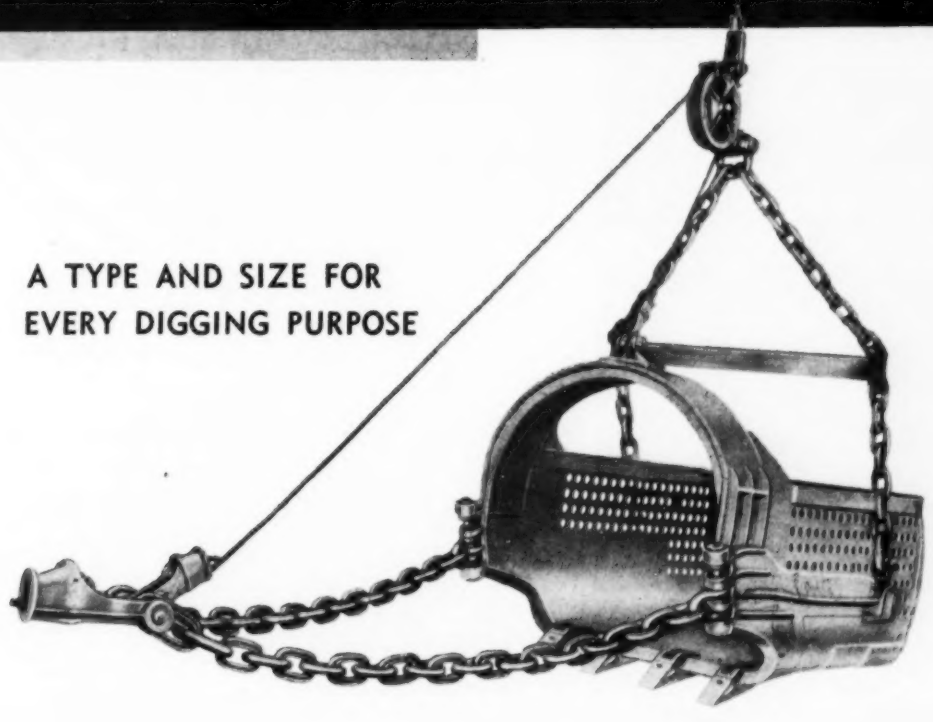
When digging conditions are rough . . .

on small jobs or large . . . men who know

specify Hendrix Dragline Buckets

HENDRIX DRAGLINE BUCKETS

A TYPE AND SIZE FOR
EVERY DIGGING PURPOSE



3/8 to 40 Cubic Yards

Hendrix Lightweight Dragline Buckets

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

You Get More Use per Dollar with Homoflex Hose

For air, water, other fluids and gases Homoflex Hose is
easier to handle because it has no pre-set twist,
coils and uncoils easily with no kinking,
is light in weight, yet strong, and
"Flexible as a Rope."

R/M Hose Engineering makes possible high flexibility . . .
homogeneous cover, strength member and tube
that are inseparable.

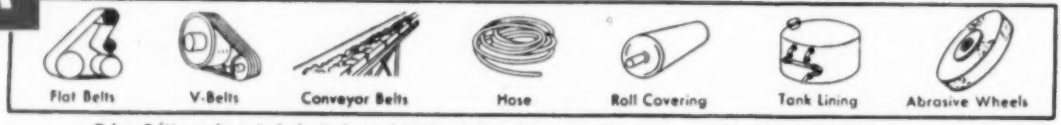
Homoflex Hose gives you
"More Use per Dollar" two ways . . .
men do more work with it . . .
and it lasts longer.

Ask the R/M Distributor for Bulletin 6879 . . .
and, don't forget, there's equally good
"More Use per Dollar" engineering in
All other types of R/M hose, conveyor belts,
V-belts and flat transmission belts.

RM

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Packings • Engineered Plastic, and Sintered Metal Products • Bowling Balls RM 408

ALL THE WAY TO THE PUMP YOU'LL FIND AMSCO FITTINGS

Look at the illustration. Starting with the *enclosed-type flap valve,* in the foreground, you will pass one Amsco manganese steel fitting after another . . . all the way to the dredge. Chances are the pump will be Amsco, too.

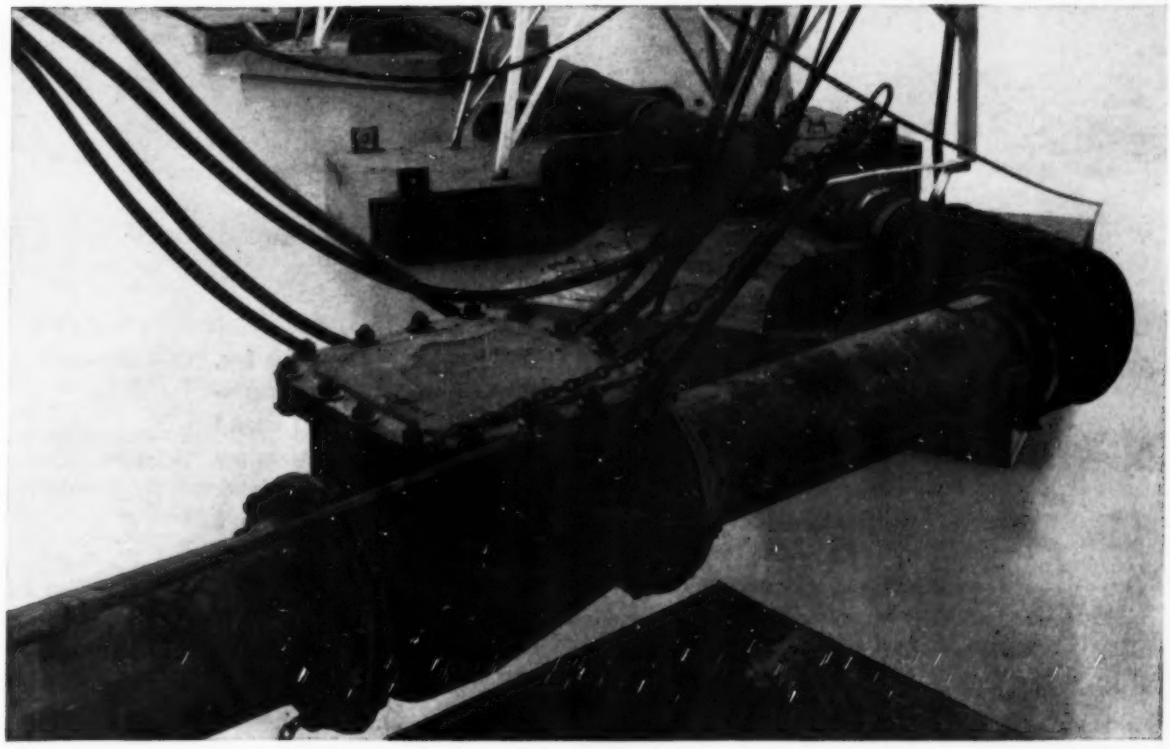
Operators everywhere are finding that for long service life under high pipeline velocities and pressures, Amsco manganese steel fittings serve best. These fittings are built to withstand both the shock of large stones and the abrasion of sand-laden water.

Manganese steel also offers a safety factor. When finally worn thin, it doesn't just break through all at once. Slow leaks give ample warning that it's time for replacement.

For pumping service and foolproof pipeline transmission, be certain you specify Amsco manganese steel . . . the toughest steel known.

AMSCO PIPELINE FITTINGS

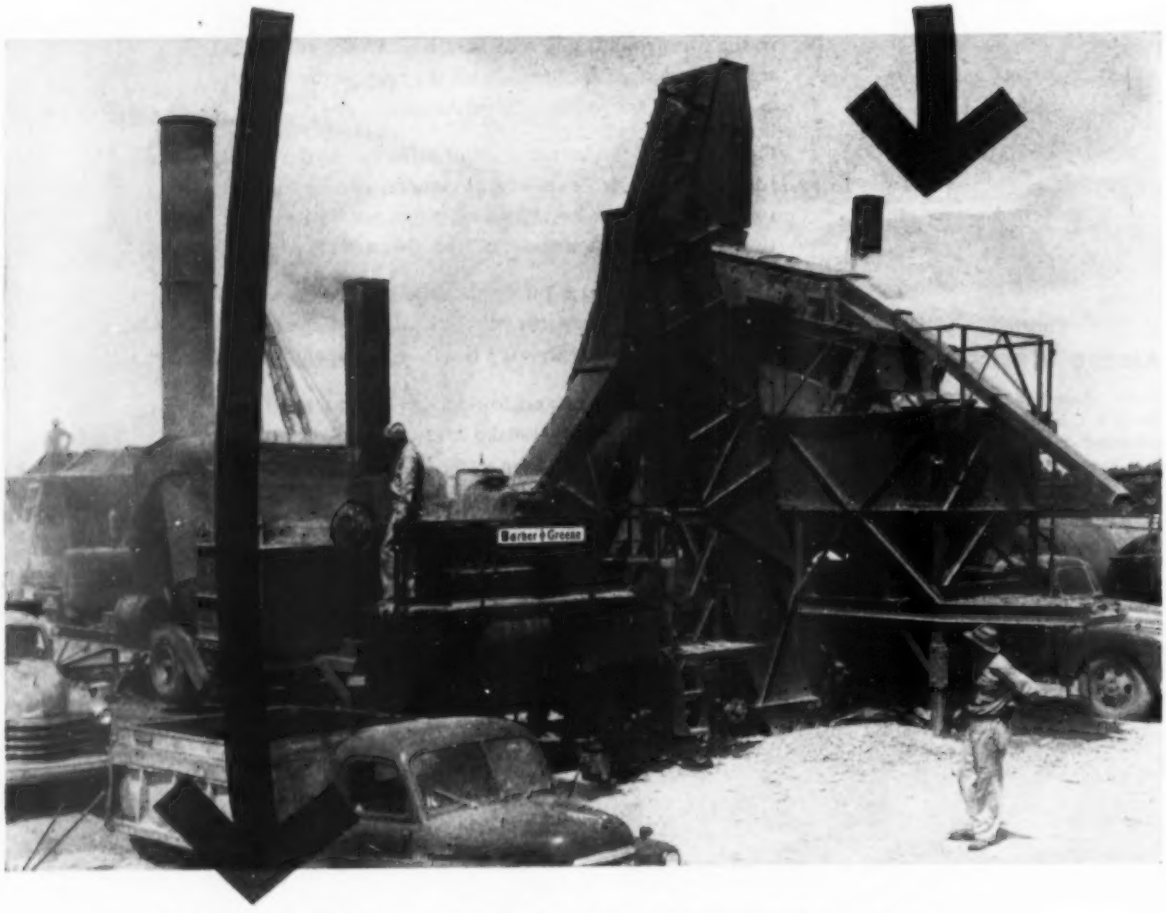
Elbow · Hose nipple · 90° Elbow · Bulkhead fitting · Open-type flap valve · Handhole fitted straight nipple · 45° long radius elbow Straight · Enclosed-type flap valve



Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

SIMPLICITY GYRATING SCREEN— A VITAL COMPONENT IN THE EFFICIENT BARBER-GREENE 848 BITUMINOUS PLANT



The Barber-Greene 848 Plant is well known to road construction men for fast, efficient production of the finest bituminous mix. And no wonder. For the aggregate fed into the plant is sized and separated on a Simplicity Model BH Enclosed Gyrating Screen. This 3½ Deck Screen has a rated capacity of 100-120 tons per hour, but in actual operation, it consistently handles aggregate at a much higher rate. Simplicity single, double and triple deck Gyrating Screens are available in a number of sizes to screen and separate materials fast and accurately. Maintenance and operating costs are unusually low. For complete information about Simplicity Screens, Os-A-Veyors and other equipment, consult a Simplicity sales engineer or write us today.

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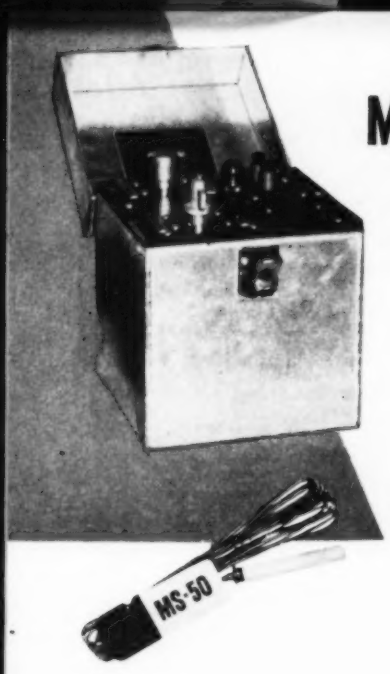
- Sales Representatives In All Parts Of The U.S.A.
- For Canada: Canadian Bridge Engineering Company, Ltd., Walkerville, Ontario
- For Export: Brown and Sites, 50 Church Street, New York 7, N. Y.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND, MICHIGAN



Midwest Limestone Quarry Saves Money by SWITCHING TO DU PONT IRON WIRE MS DELAY CAPS EXCLUSIVELY

Du Pont CD* Blasting Machine Furnishes Ample Firing Power

The use of a Du Pont CD Blasting Machine for firing multiple-hole wagon drill blasts enables the Kaser Construction Co.'s Red Oak Quarry, Montgomery County, Iowa, to realize a substantial saving by replacing the usual copper wire blasting caps with the more economical iron wire variety. Typical shot (below) was made with this dependable, economical Du Pont blasting "team."

1. PRIOR TO BLAST. Operators loading charges of Du Pont Red Cross Extra 50% into wagon drill holes. Quarry face averages 10′ in height, hole spacings 8′ x 8′. Holes were primed with economical iron wire MS Delay Electric Blasting Caps. The shot of 125 holes was connected in parallel series and fired with Du Pont CD-32 blasting machine.

2. CD-32 BLASTING MACHINE readied for firing. Terminals of the unit are dead until switch is thrown. Power cannot reach blasting circuits except by deliberate action of operator. And this 22-lb. machine provides ample power to fire iron wire shots of this size and larger, dependably and consistently, day after day.

3. EXCELLENT BREAKAGE allows quick removal of rock. CD Blasting Machine not only allowed the use of more economical iron wire electric blasting caps, it also eliminated the expensive-to-maintain permanent shooting power lines. These lightweight, sturdy, powerful blasting machines are available in four sizes . . . there is one that will satisfy any size operation.

*Condenser Discharge

Why not introduce this more economical method of blasting in your own quarry? It's a blasting "team" that's helping boost profits in many quarry operations. Ask the Du Pont Explosives Representative in your district for complete information about using economical Du Pont Iron Wire Caps with the CD Blasting Machine. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

How does your shovel compare with a BAY CITY?

Make a comparison *NOW* of the brief, essential specifications listed here and prove to yourself why dollar for dollar the BAY CITY heavy-duty ¾ yard Model 45 is today's biggest value in excavating and material handling equipment. This is only part of the story — consider the design features for full convertibility — keep in mind the operating advantages that assure snappy swing, quick control, easy operation, and fine balance.

For the full story call your BAY CITY dealer today.

BAY CITY SHOVELS, INC. • Bay City, Michigan

SPECIFICATION	BAY CITY Model 45	Other ¾ Yd. Shovels
Weight (as shovel)	46,500 lbs.	
Power (std. gas)	81 HP @ 1200 RPM	
Engine Displacement	517 cu. in.	
Shovel Boom	19′ 0″	
Crowd	One Piece Chain	
Digging Radius 45°	28′ 1″	
Crane Boom (Std.)	35′ Pin-connected	
Crane Capacity, 10′ Rad.	28,500 lbs.	
Hoe Boom	20′ 0″	
Digging Depth	19′ 6″	
Bases	Cast Alloy Steel	
Crawler Bearing Area	24″ Shoes—5930	

WRITE for this CATALOG

Get this 20-page catalog, packed with pictures of parts, assemblies and jobs, illustrating the big value built into this ¾ yard crawler. It's yours for the asking.

222

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

GM DIESEL
CASE HISTORY NO. 5310-1X

OWNER: American Zinc Company, North Friends Station Mine, Mascot, Tenn.

INSTALLATION: GM 4-71 Diesels powering 3 Koehring Dumptors. Units haul 8¼ tons of rock and ore on 1100-foot run up 11½% grade to surface.

PERFORMANCE: GM Diesel-powered units help 20-man crew produce 500 tons of ore per day. Use of rubber-tired equipment cut cost of access shaft construction by 70%.

GM
GENERAL MOTORS
DIESEL
POWER

GM DIESELS GO UNDERGROUND

to make trackless mining pay

One of the world's most efficient small underground mines, the American Zinc Company's new North Friends Station mine is proving the economy of trackless operation. With a fleet of three GM Diesel-powered Koehring Dumptors handling the haulage, the mine is producing 500 tons of ore per day—about 25 tons of ore per man-shift. Mine Foreman Bill Armstrong says: "These units run along month after month with almost no repairs. Our costs are much less than we expected."

General Motors 2-cycle Diesels are just as much at home underground as on the surface. Two-cycle operation with uniflow blower scavenging gives more complete combustion of low-cost fuel for higher efficiency and cleaner exhaust. Used with exhaust scrubbers and adequate ventilation, mine air stays well within permissable limits. And two-cycle operation means faster acceleration, quicker response to controls, faster haul cycles for increased production.

There's a GM Diesel for every kind of mining job. Specify GM Diesel power in *your* equipment. It will save you money.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Units . . . 16 to 275 H.P. Multiple Units . . . Up to 840 H.P.

Want to Reduce Drilling Costs?

then specify

"Hard Vector Oriented" *

DIAMOND BITS by HOFFMAN BROS.

Rigid laboratory and field tests prove that Hoffman Oriented Diamond Core Bits reduce drilling costs. They cut faster — last longer — and have a lower power ratio per foot than ordinary diamond bits. Extra savings are possible on most drilling jobs because each diamond in a Hoffman Oriented Bit is scientifically set to bring out its hardest, sharpest cutting edge.

* Orienting drill bort (industrial diamonds) into the crowns of core bits by Hoffman Bros. is based directly upon findings made by the U. S. Bureau of Mines.

CONTRACT DRILLERS FOR 50 YRS.

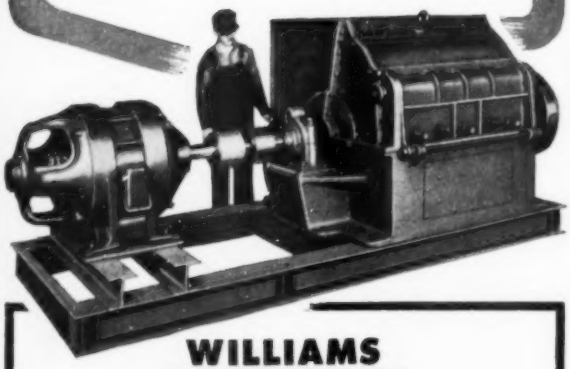
Contracting both coal and mineral test drilling since 1902, Hoffman Bros. are completely equipped to save you time and money on your next diamond drilling job. Investigate the savings possible on test drilling for coal, ore and foundations. Free estimates.

Don't forget to ask for complete information on Hoffman Oriented Diamond Bits.

HOFFMAN BROS. DRILLING CO., Inc.

HUNGER BLDG. PUNXSUTAWNEY, PA.

Only One Operation To Crush 6" Stone To Agstone Or Smaller!



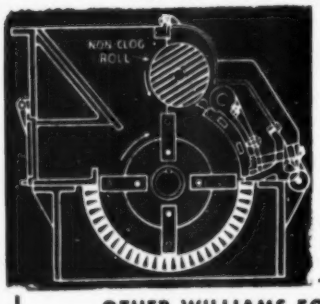
WILLIAMS SECONDARY HAMMER MILLS

For speed and stepped-up output in reducing rock of 6" size to agstone — or down to 20 mesh if required — Williams secondary hammer mills are in a class by themselves! Capacities range up to 75 tons per hour. Hundreds of installations have proved them outstanding profit-makers!

Extremely heavy rib-reinforced construction — manganese steel liners and breaker plates — easy adjustment to compensate for wear — double duty hammers — metal trap for tramp iron — instant access for service — these and many other features make the low cost Williams Hammer Mills top paying investments!

Many Sizes For Any Requirement

WRITE FOR CATALOG



NON-CLOG ROLL MECHANISM

The best way to handle wet, sticky clay or shale direct from pit for quick grinding without clogging. Roll is attached to hopper opening. Can be driven off main pulverizer shaft if desired.

OTHER WILLIAMS EQUIPMENT

ROLLER AND IMPACT MILLS with Air Separation for grinding to 325 mesh or finer . . . HELIX-SEAL MILLS for dustless or wet grinding . . . DRYER MILLS . . . AIR SEPARATORS . . . VIBRATING SCREENS . . . COMPLETE "PACKAGED" PLANTS ready to install.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.

902 ST. LOUIS AVE. ST. LOUIS 6, MO.

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

"We're Bustin' Up Those Big Rocks Now!"

California company reports INTERNATIONAL U-450 gasoline engine has power to crush bigger rocks than ever before possible.

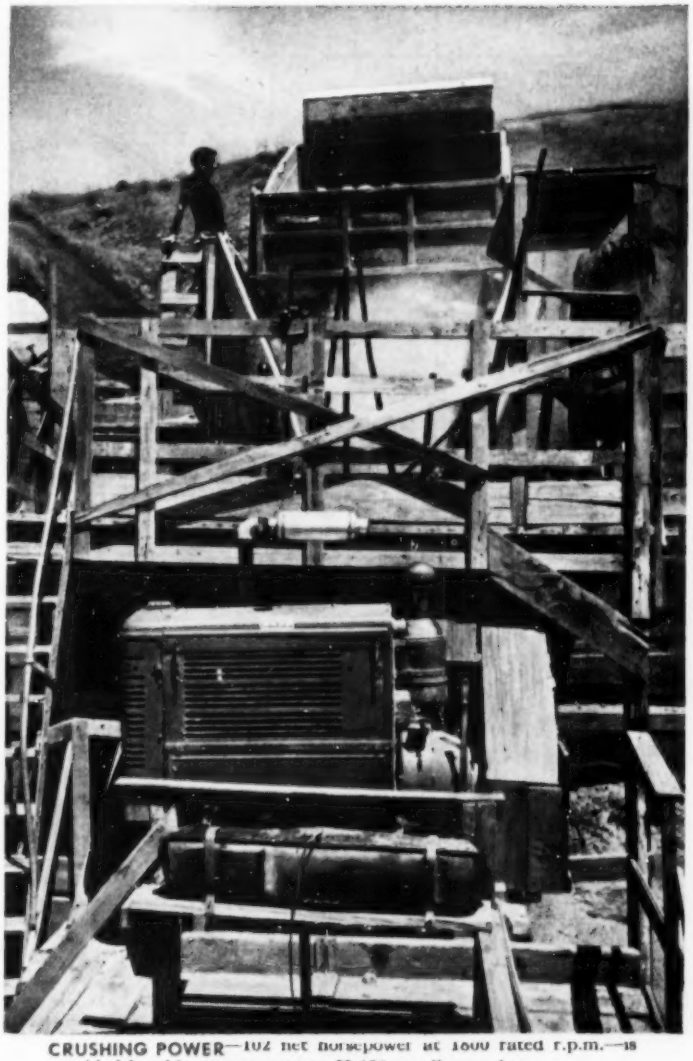
The Goddard brothers of Hayward, California, don't worry about the size of rocks they dump in the hopper of their crushing plant, since they replaced an old engine with a new INTERNATIONAL U-450 power unit.

Owner John Goddard spells out the transformation this way: *"We're bustin' up those big rocks now. It's all because of our new engine—the INTERNATIONAL U-450. She's loaded with power and could easily double our current production of 500 tons daily if we could only get more rock."*

The U-450 is one of the seven new carbureted engines recently added to the INTERNATIONAL line which now includes 18 models—diesel, gasoline and gas—ranging from 16.5 to 200 net horsepower.

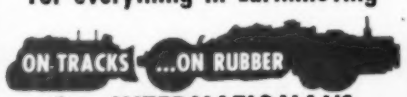
There's a size for every quarry or pit operation, and you can get expert assistance in cutting your power costs and stabilizing your production by seeing your INTERNATIONAL Industrial Distributor or Power Unit Dealer today. He'll give you the low-down on the dividends you can expect from INTERNATIONAL "Power that Pays."

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1



CRUSHING POWER—102 net horsepower at 1800 rated r.p.m.—is provided by this INTERNATIONAL U-450 gasoline engine.

For everything in Earthmoving



See INTERNATIONAL'S Complete Earthmoving Line

INTERNATIONAL HARVESTER

POWER THAT PAYS

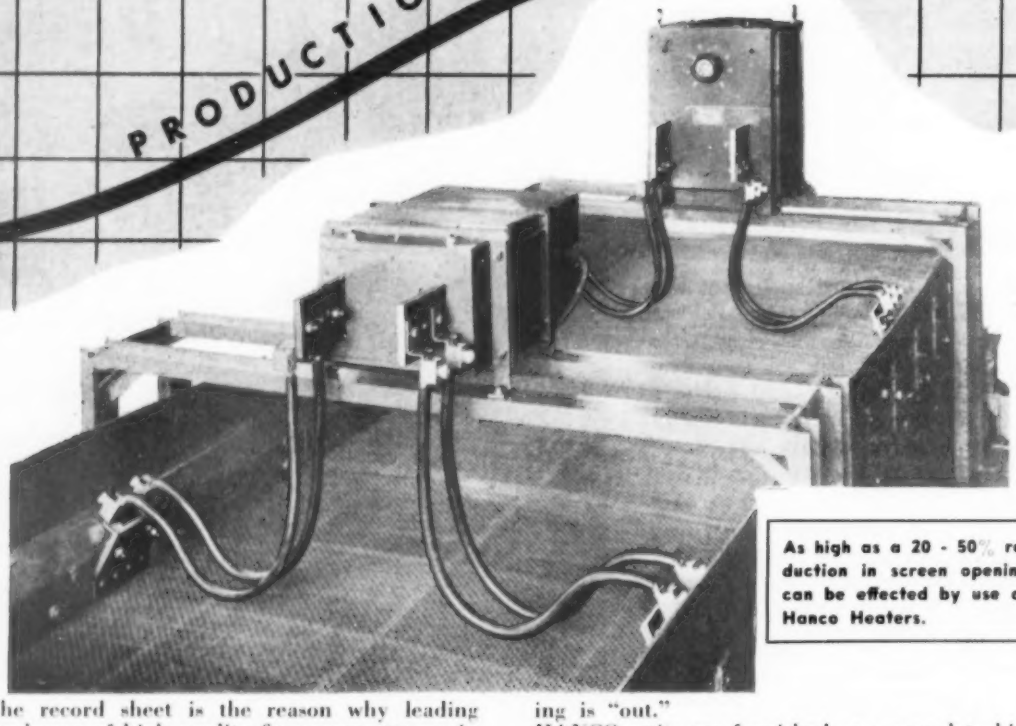
INTERNATIONAL

HANCO

ELECTRIC SCREEN HEATERS

for Peak Sizing Efficiency

PRODUCTION AND PROFITS



As high as a 20 - 50% reduction in screen opening can be effected by use of Hanco Heaters.

The record sheet is the reason why leading producers of high quality fine aggregates equip their vibrating screens with HANCO Electric Screen Heaters.

Any kind of aggregate makes a "non-stop" passage through a HANCO-heated screen . . . sizing is more accurate, equipment operates at full capacity, cleaning labor is eliminated, and screen life is prolonged because manual beating is "out."

HANCO units are furnished as a complete kit, designed to match original fittings.

The HANCO Quick-Change Attachment permits cloth changes as readily as on unheated screens. Easily installed, economically operated HANCO Heaters reduce processing costs up to 50%. They will improve the performance of *your* screens, too!

HANCO HEATERS ARE AVAILABLE ON MOST NEW SCREEN EQUIPMENT

Write today for descriptive bulletin

The first electric heating system in the quarrying industry

Hanco

F. R. HANNON & SONS · CANTON 7, OHIO

Engineers and Manufacturers Since 1926

WHAT FULL CONTROL MEANS

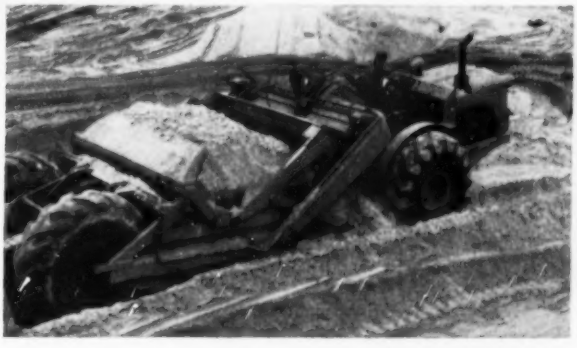
to the operator of an Allis-Chalmers TR-200 Motor Wagon

Fast, Efficient Loading — hydraulic steering control gets the TR-200 under the shovel fast without tiring wheel fight. Large top area permits fast loading with less spillage . . . double steel floor is reinforced with heavy oak plank to absorb loading shocks. Steering jacks and tires are fully protected from falling rock. The TR-200 carries 15 cu. yd. heaped or 18-ton loads.

Quick, Clean Dumping — operator controls two hydraulic jacks to dump and return bowl. Because this unit's wheelbase remains stationary, all four brakes can be set for maximum safety in bank-edge dumping. Rear end dumps far enough over embankment to eliminate rehandling material. Tapered bowl design and 70-degree tilt give quick, complete load ejection. Body may be heated to prevent load freezing.

Safe, High-Production Hauling — no worry when highballing a full load because four-wheel air brakes stop the TR-200 quickly even if the engine should stall. Steering pistons are equipped with stops to eliminate jackknifing. High horsepower-to-yardage ratio and large, rock-lug tires speed your operations . . . even on steep grades and in heavy going. The TR-200 travels at speeds up to 21.6 mph., delivers more loads, reduces idle shovel time.

Plus Added Versatility — The same 176-hp. diesel tractor unit and hydraulic controls may be used to operate an interchangeable self-loading scraper body for large scale stripping and hauling jobs.



GET THE FULL STORY FROM YOUR ALLIS-CHALMERS DEALER

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, WIS.

MECHANICAL AIR SEPARATOR

BUILT IN A FULL RANGE OF SIZES AND TYPES FOR FINE CLASSIFICATION

No other separator is backed by so many years of air separating experience and progressive improvements as the Raymond.

Its advanced design is featured by the patented Whizzer Principle of classification.

Its rugged construction is evidenced by dependable trouble-free service and record low maintenance.

Its ease of control is made possible by the simple external adjustment of damper slides.

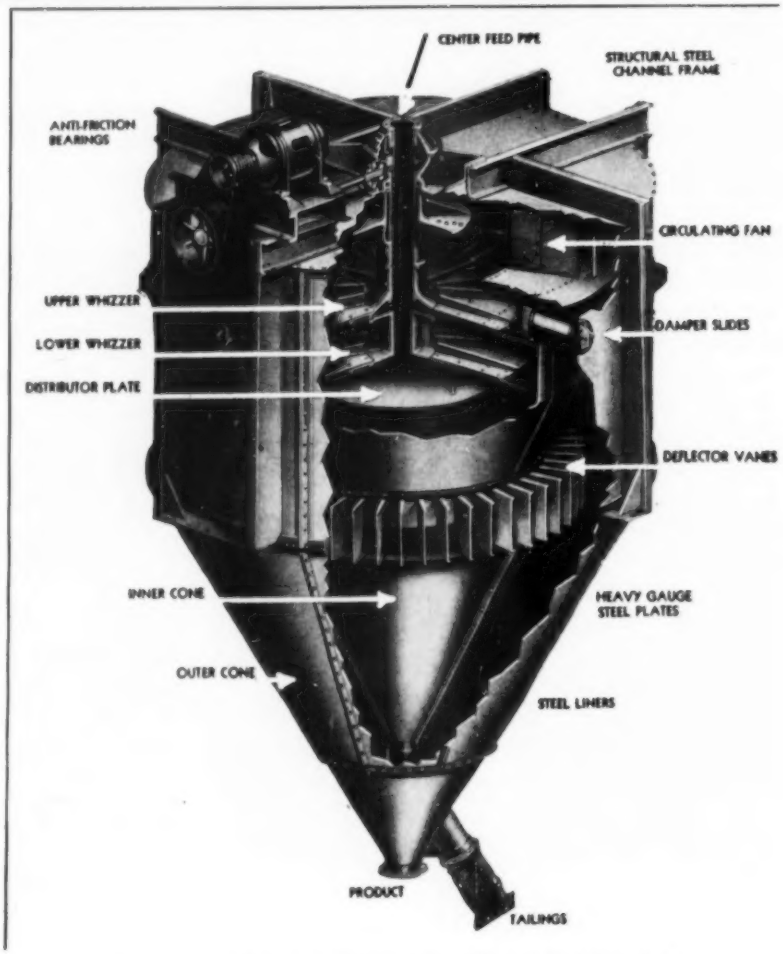
Its efficiency in operation is shown by increased mill capacities of 25% to 75% or more in closed circuit grinding.

RAYMOND Whizzer Separators are adaptable to an extremely wide range of materials, including cement, lime, gypsum and other non-metallics, as well as a great variety of manufactured products.

Special Raymond Separators, equipped with hardened alloy liners and wear-resistant parts, are highly economical for classifying abrasives, such as silica sand, flint, feldspar and similar materials.

Raymond Super Separators are now available for producing extremely fine powders in the lower micron particle sizes beyond the range of the standard type classifiers.

If you have a special classifying operation, RAYMOND can build the type of Separator to handle the job.



DOUBLE WHIZZER MECHANICAL AIR SEPARATOR

Equipped with two banks of revolving whizzer blades and with vertical slide dampers. Specially adapted for handling powdered materials requiring close particle size control in the high fineness range.

Write for Raymond SEPARATOR CATALOG

COMBUSTION

RAYMOND DIVISION

RAYMOND WHIZZER SEPARATION is the Key to Better Cement Production

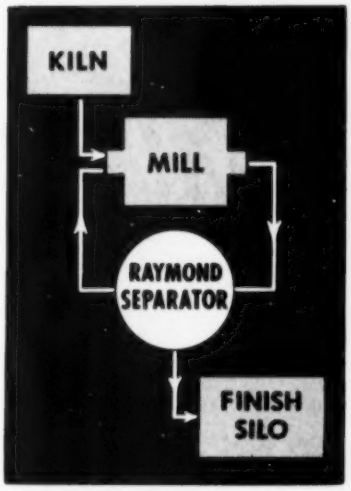
RAYMOND Whizzer Separators have proved outstandingly successful in the cement field for classifying both raw mix and cement clinker.

Close control is assured over the specific surface area of the finished cement, and consistently uniform materials are readily produced at any surface area or fineness specification. With the proper setting of the separator, the slide damper controls can be adjusted externally to provide any fineness specification from standard Portland to high early strength cements.

The Whizzer principle of separation gives you advantages of:—

- Closer classifications of the fines
- Cleaner tailings
- Easier control of specifications
- Increased mill output
- Overall economy in operation

It is a sound investment to install a Raymond Whizzer Separator for improving cement production and reducing the per-barrel-cost of any grade you make.



The Raymond Mechanical Air Separator is an important "link" in your cement production line.

SINGLE WHIZZER SEPARATOR

This is the standard type unit for classifying powdered materials to regular commercial finenesses, and dedusting operations.

THIRTY-INCH SEPARATOR

For small capacity operations, as well as for laboratory use.

LABORATORY SEPARATOR

For classifying test samples. A complete motored unit.

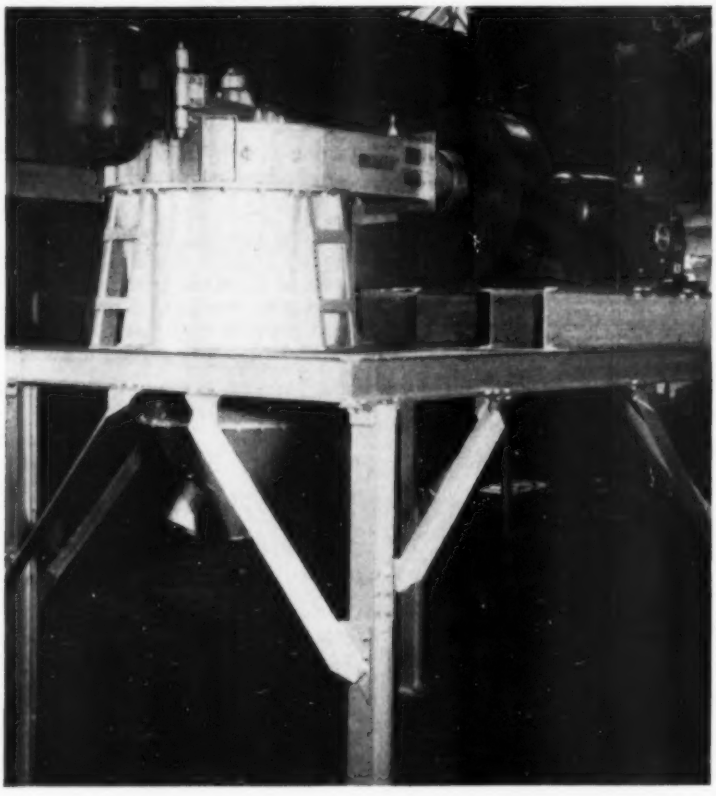
ENGINEERING, Inc.

1321 North Branch Street • Chicago 22, Illinois

Sales Offices in Principal Cities

NEW TYPE STURTEVANT AIR SEPARATOR

Recovers Fines in Micron Ranges



Now the famous Sturtevant Whirlwind Air Separator, so widely used throughout industry for fast recovery of fines, has been specially designed to "pick-off" classified materials such as pigments, limestone fillers, plastics, oyster shells, etc., in micron sizes.

These highly efficient air separators select a continuously uniform product of desired fineness. Used in a closed circuit with grinding mills, they increase production, cut power costs.

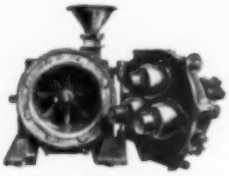
Large feed opening, rugged construction, ease of adjustment, low power consumption assure economy of operation and minimum upkeep. Write for further information.

STURTEVANT
MILL COMPANY
104 CLAYTON STREET
BOSTON 22, MASS.

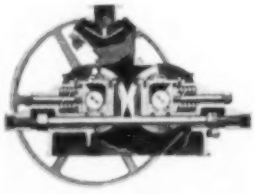
Designers and Manufacturers of:
CRUSHERS • GRINDERS • SEPARATORS
CONVEYORS • MECHANICAL DENS and
EXCAVATORS • ELEVATORS • MIXERS

OTHER STURTEVANT EQUIPMENT

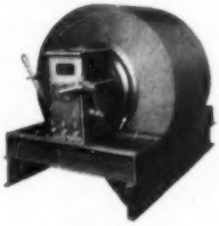
MICRONIZER® GRINDING MACHINE
A fluid jet grinding machine, the Sturtevant Micronizer speeds reduction of materials to low micron sizes. These jet mills are especially applicable in fields where a particle size in microns is desired.
Sturtevant Micronizer grinding machines are available in many sizes and capacities.



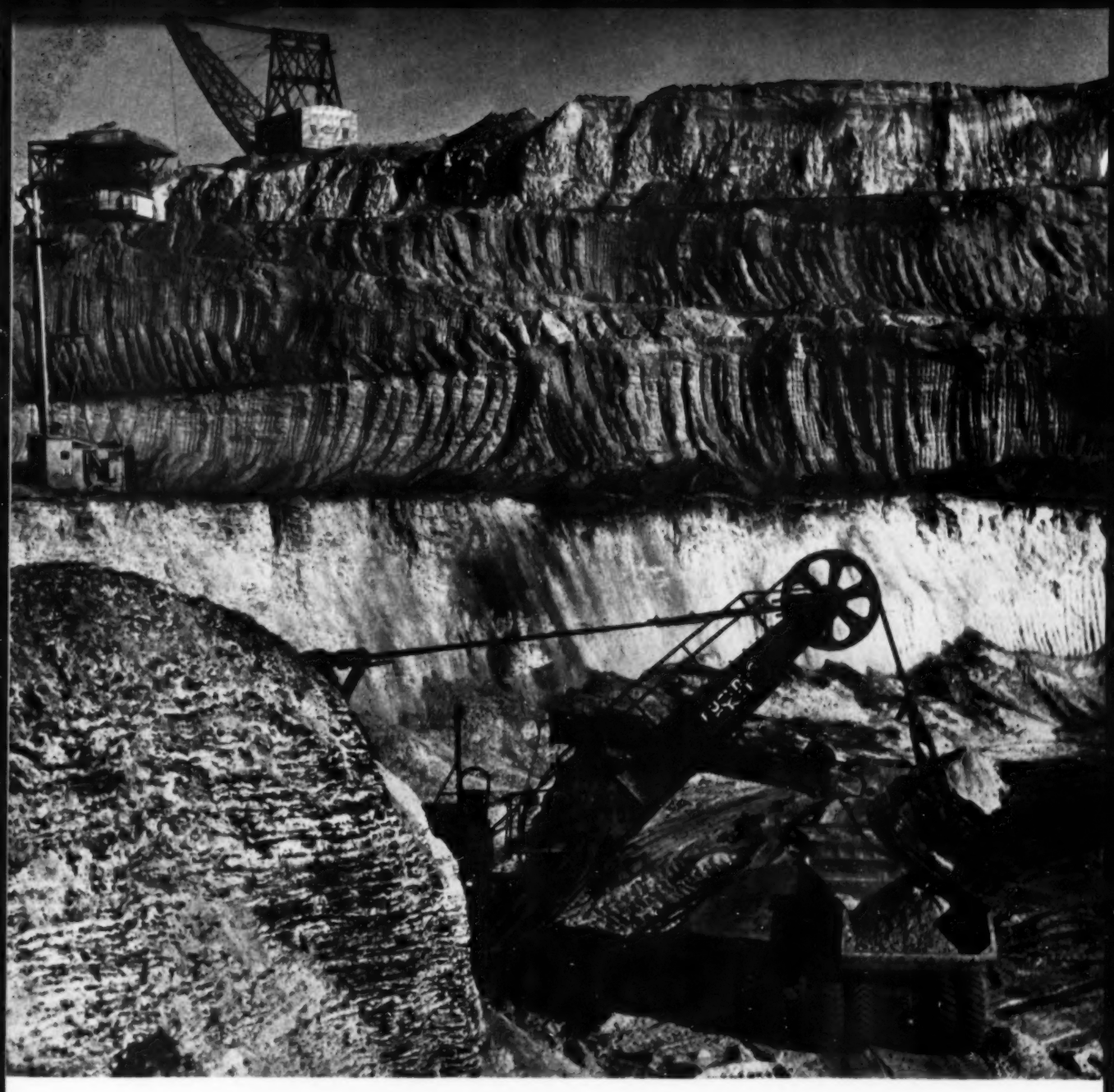
RING-ROLL MILLS
For medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open door accessibility. Many sizes. No scrapers, plows, pushers, or shields.



CRUSHING ROLLS
For granulation, coarse or fine, hard or soft materials. Automatic adjustments. Crushing shocks balanced. For dry or wet reduction. Sizes 8 x 5 to 38 x 20. The standard for abrasives.



BLENDER
Four-way mixing action assures a thoroughly blended product. Open-door accessibility permits easy cleaning. Available in many mixing capacities for ½-ton per hour and up.



IMPOSSIBLE WITHOUT EXPLOSIVES

120 million tons of iron ore, it is estimated, were mined in open pits and underground operations last year. This photograph shows some of the highly mechanized operations which make such huge production possible.

But before the ore can be dug, millions of pounds of explosives are used to break it loose from working faces, to assure easy shovel digging and rapid transportation of the ore to the crushing and washing plants.

The manufacture of explosives and the knowledge of their efficient and economical use have been Hercules business for 40 years. During this time we have studied the varying conditions under which explosives are used and have pioneered in developing the right types of explosives for industrial needs. Hercules explosives and services assure economical and efficient blasting not only in metal mining, but in coal mining, quarrying, construction—in fact, wherever explosives are used.

HERCULES POWDER COMPANY

INCORPORATED

Explosives Department, 960 King St., Wilmington 99, Del.

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N.Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.

X854-1

SIMPLE AS

Getting profitable life from castings which must face heavy abrasive service is simple as A B K.

ABK Metal castings stand up better and last longer because of carefully controlled metallic structure and specified hardness (500 to 700 Brinell). Because ABK Metal has those extra qualities that ordinary "abrasion resistant" metals lack, you can expect up to seven times greater service from ABK Metal castings.

The extra life of ABK Metal castings saves you dollars both in replacement parts and labor—cuts downtime, increases your operating efficiency. Let us show you how ABK Metal, an exclusive Brake Shoe product, can solve your abrasive wear problems.

2166

AMERICAN Brake Shoe COMPANY

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BRAKE SHOE AND CASTINGS DIVISION

230 Park Avenue, New York 17, N. Y.

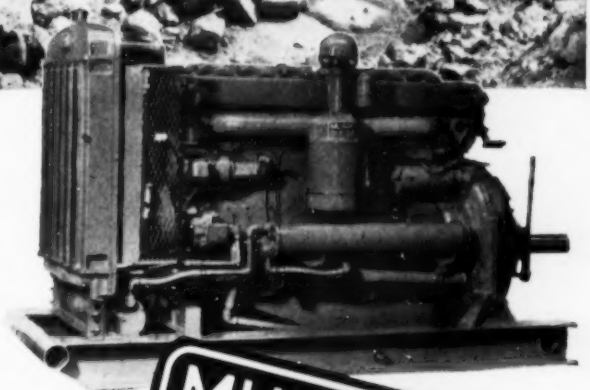
3 MURPHY DIESELS

furnish economical, dependable power for Dillon Stone Co.

ANY CRUSHING OPERATION is well-powered when it's Murphy Diesel powered. At the Dillon Stone Co., Columbus Junction, Iowa, a 190 H. P., continuous, Murphy Diesel powers the Cedarapids double impeller impact breaker primary. A 190 H. P., continuous, Murphy Diesel powers the Cedarapids portable hammer-mill secondary crushing and screening unit. A 110 K. W. Murphy Diesel Generator Set (mounted in a truck) supplies electricity for motors on the secondary unit, the portable screening plant and the bins. Here is a crushing operation that takes full advantage of Murphy Diesel's economy of operation, long life and rugged dependability.

You can have these same advantages working for you in your plant whether it's portable or stationary. Just call your Murphy Diesel Dealer. He'll give you full information on how Murphy fits your needs.

MURPHY DIESEL COMPANY
5307 W. Burnham St.
Milwaukee 14, Wisconsin
Sales, parts, service throughout the nation.



MURPHY DIESEL

283

Heavy duty power
for rock crushing

Murphy Diesel Engines and Power Units are available in sizes from 90 to 240 H.P. Engine speeds are 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 60 to 154 K.W.

Wire Rope at Work — Here's a load that required deft manipulation by three cranes working as a team. The absorption tower being guided into place was 98 ft long, 11 ft in diameter, and weighed more than 33 tons.

For the lifting and placing of this big, cumbersome load, the cranes were rigged with Bethlehem wire rope, Purple Strand grade, in the 6 x 25 construction; sizes, ⅞-in. and ¼-in. A typical assignment for Bethlehem rope, which so capably handles the toughest lifting and hauling jobs in every kind of industry.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

MINING • CONSTRUCTION • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

SEND FOR THIS 32 PAGE MULTICLONE BOOKLET

HELPFUL-INFORMATIVE IT OUTLINES THEORIES AND BASIC PRINCIPLES OF CENTRIFUGAL DUST RECOVERY!
FIG. No. 15
Or, in still other shapes to fit specialized applications.
It is readily apparent that conventional cyclones, with their complicated manifolds and the separate inlet and outlet ducts required for each collector, are far more restricted in their adaptability to space limitations.
A further space adaptability feature found in the Multiclone is the unusual flexibility of its inlet and outlet duct arrangements. Where headroom must be kept at a minimum, the Multiclone can be installed with side inlet and side outlet ducts, giving it an "in-line" installation that requires a minimum of vertical height.
FIG. No. 16
20
FIG. No. 17
FIG. No. 18
21
32 PAGES OF DIAGRAMS AND INFORMATION

This booklet shows...

MULTICLONE'S SPACE SAVINGS...How the Multiclone requires less square footage, less cubic footage than most other equipment of comparable capacity and performance, thus saving costly plant space!

MULTICLONE'S ADAPTABILITY...How the Multiclone is more adaptable to varying inlet-outlet requirements—to varying space limitations—and is simpler to insulate, thus reducing installation costs!

MULTICLONE'S EFFICIENCY...How Multiclone's multiple *small diameter* tubes, made possible by its exclusive vane design, give higher centrifugal forces and more complete cleansing of *all* suspended particles—even small ones of 10 microns and less!

MULTICLONE'S LOW MAINTENANCE...How the Multiclone has no high speed moving parts to repair or replace, no pads or filters to clean or renew, nothing to choke gas flow or increase draft losses as suspended materials are recovered. Multiclone draft losses remain uniformly low—recovery efficiencies uniformly high—at all times!

Make sure that a copy of this helpful booklet is in your reference files by sending for your copy now!

NO MATTER whether you are now using mechanical dust recovery equipment or are planning the installation of such equipment at some future date, here is a booklet that is full of helpful and valuable information on centrifugal dust recovery. It not only explains the basic methods and principles involved, but also shows the important differences between small and large diameter separating tubes, shows how to simplify your duct work and reduce installation costs, and outlines many other important factors to be considered in selecting mechanical dust recovery equipment.

In addition, this informative booklet illustrates and explains how MULTICLONE'S unique *vane* design is fundamentally different...how it makes possible greater compactness, simpler installation, high recovery of the small particles as well as the medium and coarser ones, and many other facts on MULTICLONE advanced design.

A limited supply of these booklets is available for free distribution to those interested in mechanical recovery equipment and methods. Write for your copy today.

NOW SELLING...

COTTRELL Precipitators
MULTICLONE Collectors
TURBULAIRE Spray Dryers

...in all parts of the U. S. A. and foreign countries.

WESTERN Precipitation CORPORATION

DESIGNERS AND MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

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PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

VETERAN COOK BLOCK CO. GETS INTO READY-MIX FIELD; PICKS ERIE PORTABLE TRUCK MIXER PLANT

CROSWELL, MICH., BUILDING SUPPLY FIRM SAYS: "ANY FURTHER ADDITIONS TO OUR PRESENT SET-UP WILL BE ERIE EQUIPMENT."

RALPH W. COOK, MANAGER

Recently the Cook Block Co., in the building supplies business for more than 40 years, wanted to expand their activities. The growing demand for concrete suggested that a ready-mix plant would make a worthwhile addition to their existing facilities.

When deciding on batching equipment, they chose Erie because they considered it properly engineered and well designed to do their specific job. Performance of this plant has proven their judgment right.

If you are contemplating entering the ready-mix concrete field or are considering replacing your present plant, learn the facts about Erie before you make any decision.

One man is all that's needed to run this plant for Cook Block Co. Equipment includes: Erie Portable Combination Bin model GTES-79 cu. yds. with EWEH 3-cu. yd. combination AggreMeter; 75 TPH aggregate elevator and 50 TPH cement elevator. Sold by Contractors Machinery Co., Detroit, Mich.

For further information, write Dept. Q34 **Cable Address: EXIMPORT**

FORMERLY ERIE STEEL CONSTRUCTION COMPANY

ERIE STRAYER CO.

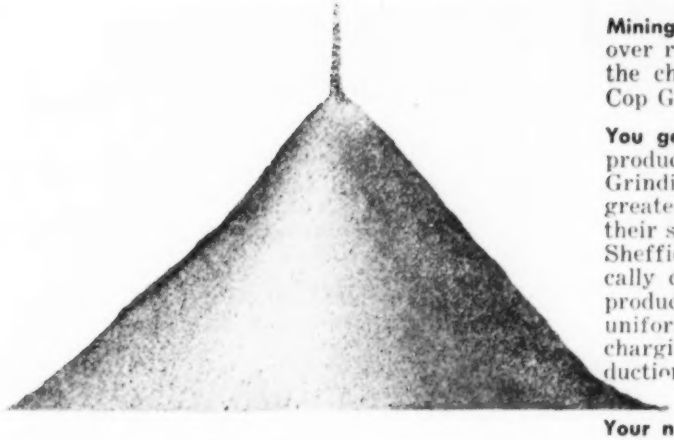
SAME PEOPLE • SAME PRODUCTS • JUST A NEW NAME

334 GEIST ROAD ERIE, PENNSYLVANIA

Why you get lower cost per ton of production with

SHEFFIELD MOLY-COP

COPPER • MOLYBDENUM • ALLOY GRINDING BALLS



Mining and milling operations the world over record important net savings when the change is made to Sheffield Moly-Cop Grinding Balls.

You get this economy and better quality production because Sheffield Moly-Cop Grinding Balls are unusually tough, have greater resistance to abrasion, and retain their spherical shape longer. The reason: Sheffield's exclusive alloy and automatically controlled manufacturing methods produce a ball of finer, denser, more uniform structure. The result: fewer chargings, less "down time", high production rate.

Your nearest Sheffield representative will show you how Sheffied Moly-Cop Grinding Balls will save costs in your operation. Get in touch with him now.

Export Representatives: ARMCO INTERNATIONAL CORP., MIDDLETOWN, OHIO

SHEFFIELD STEEL CORPORATION
HOUSTON KANSAS CITY TULSA
SUBSIDIARY OF ARMCO STEEL CORPORATION

CUT COSTS FOR Bag Packing with

AUGER-MATIC

Fills and Weighs... All in *One* Operation

NO DUST

Cut production costs by packing your product in modern self-closing bags... the AUGER-MATIC Bag Packer fills them quickly to any weight desired... shuts off automatically.

NO WEIGHING

Valve Bags fit snugly on AUGER-MATIC spout so no dust escapes . . . keeps bags clean . . . eliminates costly tieing or bag closing equipment.

NO SEWING . . . NO TIEING

AUGER-MATIC Bag Packer is equipped with multi-twist auger . . . packs any materials from powder to pellets. Easily moved from one filling point to another.

Send for descriptive literature

E. D. CODDINGTON MFG. CO.
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Galion Allsteel hoists and dump bodies are built especially *for you!*

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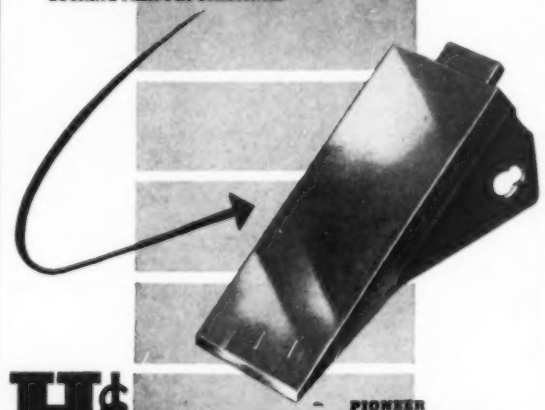

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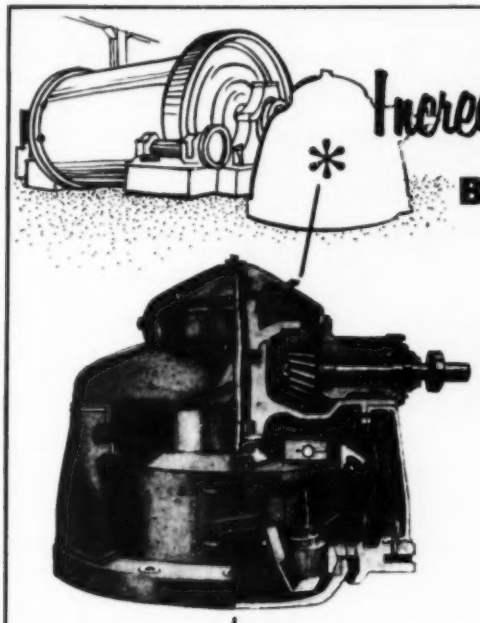

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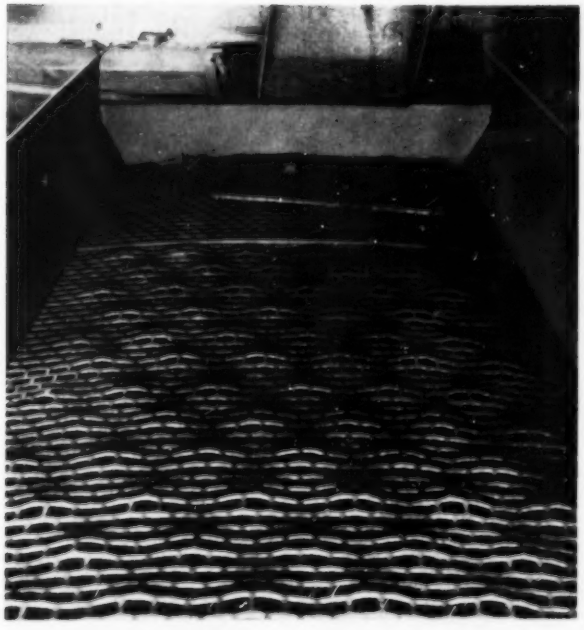

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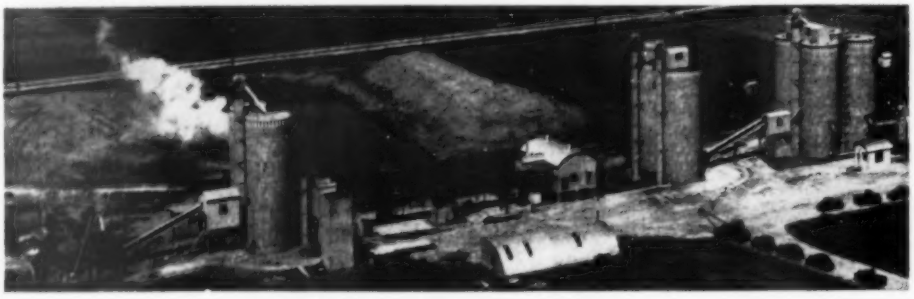

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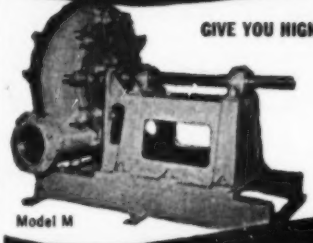

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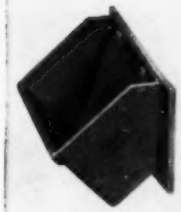

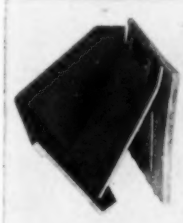

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ELEVATOR CONVEYOR BUCKET

Available in all standard sizes

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Separately mounted back automatically acts as stripper-plate to assure *complete* emptying. Irresistible leverage develops as bucket goes over top pulley, sweeping contents entirely clean. Buckets have standard pickup capacity. Double mounting makes belts last much longer.

PEKAY MACHINE & ENGINEERING CO.

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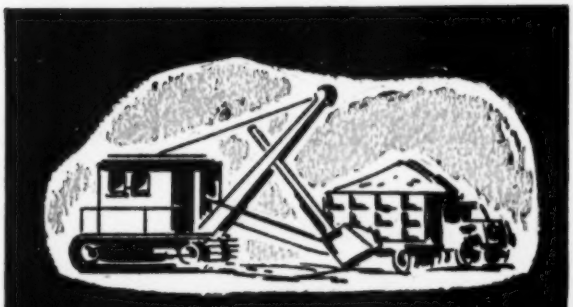

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NEW CATALOG FREE

THE BIN-DICATOR CO.

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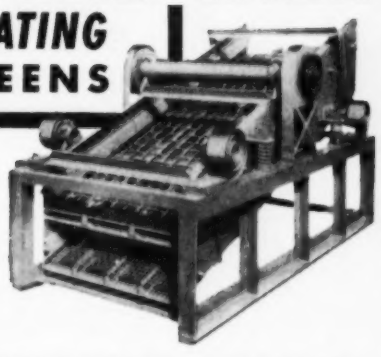

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Screening machinery, engineered by pioneers and accepted by industry throughout the world for the past 25 years, is available for various applications, in any type or size, single, double or triple-deck models, open type or dust-housed complete with hoppers and chutes fabricated to specifications.

Write to Screening Machinery Division for Bulletin S-4.

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March 1954

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

On Our Cover —

(1) Outgoing president Herbert G. Johnson and incoming president Robert C. Collins of the National Ready Mixed Concrete Association.

(2) R. P. Mumford, The Besley & Myers Co., E. O. Harwell, Stewart & Hess, Inc., and W. S. Walters, Fisher Lime & Cement Co., display this publication's 1953 safety trophies won by their companies.

(3) E. E. Jessen, R. H. Radcliffe and Jay C. Ehle, newly elected directors of the National Concrete Masonry Association.

(4) Outgoing president Sam Futorno and incoming president M. E. Bisher of the National Concrete Masonry Association.

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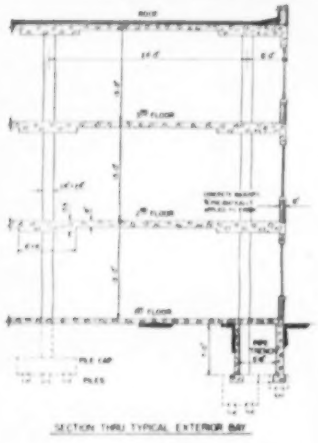
- Wash Pit for Ready-Mix Trucks 226
- New Machinery & Supplies 227
- Trade Literature 232

HOME OF THE Army Dollar

Economy-Minded Army Planning Cuts Cost by $4-Million on 14-Acre, All-Concrete Structure, with 1¼-Million sq. ft. of Usable Floor Space

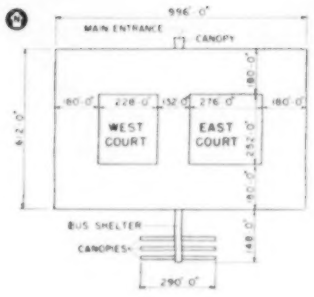


SECTION THRU TYPICAL EXTERIOR BAY

● New Finance Center at Fort Benjamin Harrison, near Indianapolis, second largest all-concrete administrative structure in the world, dwarfed only by the Pentagon, now houses Army Finance Operations, formerly scattered throughout the U. S.

Utilizing streamlined concreting methods, the 3-story, flat-slab, reinforced-concrete structure, with 1¼-million sq. ft. of usable floor space, was completed ahead of schedule, in spite of strikes, cyclone and blizzard. A total of 83,000 cu. yds. of concrete, pumped to all points within the 14-acre building area, was placed at a yard-a-minute pace.

Here is functional design, enduringly expressed in concrete, for utmost stability, durability, fire-safety and lowest annual cost — completed for $4-million less than original $23-million estimate —quality concrete, every yard of it, produced with over 100,000 barrels of Lone Star Cement.



PLAN VIEW

FINANCE CENTER, U. S. ARMY:
Fort Benjamin Harrison, Indianapolis
E. J. BEAN, Brig. Gen., U.S.A., Commanding
Supervision: **U. S. ARMY CORPS OF ENGINEERS,** Chicago
Architects-Engineers: **HARLEY, ELLINGTON & DAY,** Inc., Detroit
Ready-Mix Lone Star Concrete—Joint Venture:
READY MIXED CONCRETE CORP. • HESTON CONCRETE CO.
CARLSEN CONCRETE SUPPLY, all of Indianapolis
Masonry Units: **SPICKELMIER COMPANY,** Indianapolis

General Contractors—Joint Venture:
SHERRY-RICHARDS CO., Chicago
C. E. YOUNGDAHL & CO., Inc., Long Island City, N. Y.
CORBETTA CONSTRUCTION CO., New York
JAMES McHUGH CONSTRUCTION CO., Chicago
Contractor for Water Supply, Sewers, Railroad Siding:
CALUMET PAVING COMPANY, Zionsville, Indiana
Piling: **CASEY & CASE,** Detroit

LONE STAR CEMENTS COVER
THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 136,000,000 SACKS ANNUAL CAPACITY

The CONCRETE MANUFACTURER

March 1954

We Need A Name

WHILE we consider ourselves among the concrete block industry's warmest partisans, there is one peculiarity of the field to which we have never become reconciled. We refer to the industry's appalling failure to produce a single widely recognized and universally accepted name for its product. Even disregarding the multitude of copyrighted trade names under which individual concerns market their output, the block industry's product travels about under far more aliases than any basic building material with which we are familiar. If there had been a concerted campaign to create confusion, we doubt if any more confusion could possibly have been achieved.

Among the more prominent tags now in use are concrete masonry units, building units, concrete block (or blocks), cement block (or blocks), concrete tile, cement tile, and just plain block (or blocks). Meanwhile, our chief competitor has gotten along rather comfortably for a good many centuries with the simple, easily-pronounced, unforgettable name "brick".

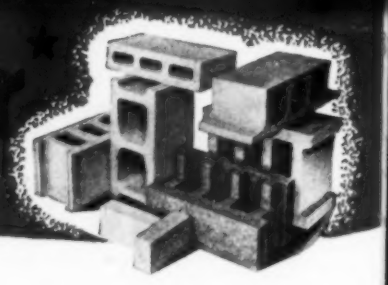
No one can say to what extent our nomenclatural disadvantages may have contributed to the total problem of gaining public acceptance for our product, but we find it impossible to believe that the two problems are unrelated. Called by whatever name one chooses, concrete block is becoming more and more definitely a consumer material, and the whole history of merchandising seems to prove that a simple, easily-retained name is a priceless asset in selling to the public.

We are not by any means inclined to underestimate the number or the magnitude of the difficulties which the block industry would confront if it tried to adopt a single, all-embracing name for its product. Having regard for the fact that neither the public nor the general press has shown any capacity or desire to observe the relatively simple distinction between cement and concrete, it may well be that our own far more complex problem is beyond solution.

Even a small effort in this direction, however, might prove unexpectedly rewarding. A considerable number of national and state associations, as well as technical societies and private corporations, are now engaged in activities designed to promote public acceptance of concrete block. The efforts of these organizations, particularly in the field of promotion, would surely be enhanced if they were all ostensibly and specifically talking about the same product. The necessary agreement upon a single name designation could not be reached easily or quickly, but we believe the rewards of such an understanding would be at least commensurate with the effort.

William M. Avery

Another BESSER Booster*



★ This is the 107th of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

● George Parisian, President and Richard Parisian, Vice President of Standard Block and Supply Company.

Lansing, Michigan Block Plant Operator Prefers VIBRAPACS for Fast Production of Quality Block

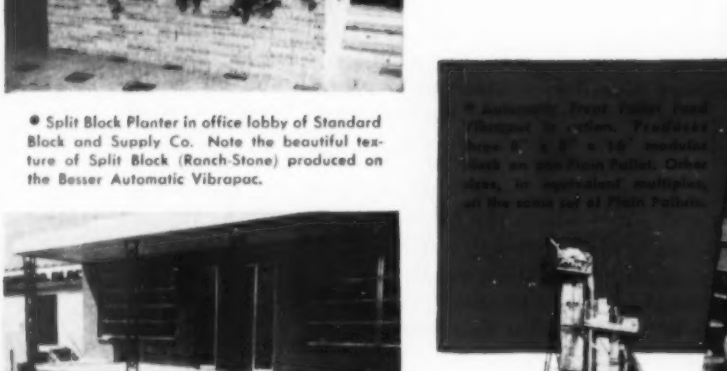
Standard Block and Supply Company, Lansing Michigan, started to manufacture block in 1939, but it wasn't until 1950 that the company forged ahead in earnest. In that year, they installed their first Automatic Vibrapac machine, a Front Pallet Feed model. Referring to this Vibrapac, President George Parisian states, "We believe it is the most advantageous machine to use. It has less down time, produces better block, and operates at less maintenance cost."

With the installation of the Vibrapac, Standard Block has been able to broaden the scope of its production. In addition to conventional block, the company produces Soffit Filler Block for floors and roofs, Ranch-Stone, Chimney Block and a variety of concrete specialties, such as lintels, steps, septic tank covers, sump pump tile, etc. Most of the units are being used for homes and commercial buildings.

Ask your Besser representative how you can step up block production in your products plant with Automatic Vibrapacs. Write today.

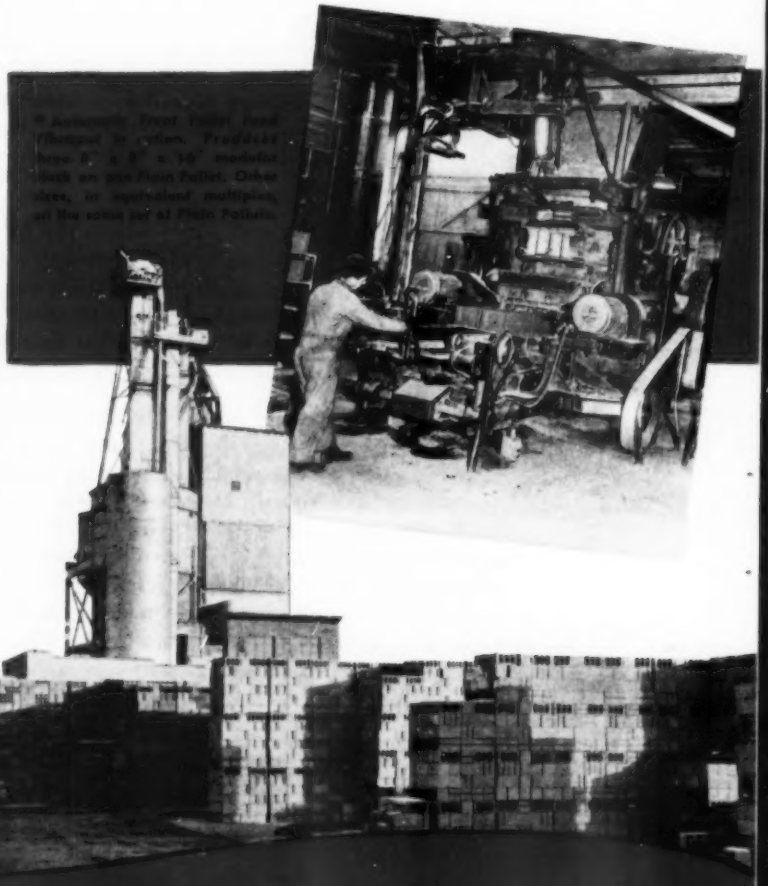
BESSER MANUFACTURING CO. • Box 131 • Alpena, Mich., U.S.A.

Complete Equipment for Concrete Products Plants



● Split Block Planter in office lobby of Standard Block and Supply Co. Note the beautiful texture of Split Block (Ranch-Stone) produced on the Besser Automatic Vibrapac.

● Exterior of Standard Block and Supply Co. office, showing liberal use of Ranch-Stone made on Bes-Stone Block Splitter.



BESSER 50th Anniversary 1904-1954

A Half Century of Concrete Masonry Progress!

A-7790-LPBC

NEWS OF THE CONCRETE INDUSTRIES

M. E. Rinker Is Elected N.C.M.A. 1954-55 President At 34th Annual Meeting

Heading the list of new officers chosen at the 34th annual National Concrete Masonry Association convention is M. E. Rinker, Rinker Materials Corporation (West Palm Beach, Fla.), named president. R. I. Lampus (R. I. Lampus Company, Springdale, Pa.), W. R. Ireland (Birmingham Slag Company, Birmingham, Ala.), and S. Carl Smithwick (Smithwick Concrete Products, Portland, Oreg.) were elected vice-presidents. Carrol Strohm Jr. (Nashville Breeko Block and Tile Company, Nashville, Tenn.) was re-elected to serve as secretary-treasurer.

Named to serve as new directors of the association were R. H. Radcliff Jr. (Radcliff Gravel Company, Inc., Mobile, Ala.), Jay C. Ehle (Cleveland Builders Supply, Cleveland, Ohio), and E. E. Jensen (Janesville Sand and Gravel Company, Janesville, Wis.). Sam Paturzo (V. Paturzo Bro. and Son, Baltimore, Md.), immediate past president of N.C.M.A., now becomes an *ex officio* member of the board. These gentlemen appear on one of the cover pictures of the CONCRETE MANUFACTURER.

A complete report of the 34th convention of N.C.M.A. appears on page 216 of this issue.

Charles H. Scholer Elected A.C.I. President for 1954-55

Charles H. Scholer, head, department of applied mechanics, Kansas State College, Manhattan, Kans., was elected president of the American Concrete Institute for 1954 when results of member balloting were announced on February 24 at the 50th annual convention of the Institute.

Professor Scholer worked on many engineering assignments for the U. S. General Land Office, the Atchison, Topeka, and Santa Fe Railroad, and the Kansas State Highway Commission. He was also affiliated with the Extension Division of Kansas State College, and has been head of the department of applied mechanics, Kansas State College since 1919, except for a leave of absence when he took charge of investigational work in New York and Pennsylvania for the Portland Cement Association in 1939 and 1940.

A member of A.C.I. since 1924, Professor Scholer serves on its Committee 115, Research, and Committee 215, Fatigue of Concrete. Administratively, he has been a member of the Institute Board of Direction and vice-president of the Institute. He has prepared and published many papers on technical subjects. Professor Scholer is also a member of A.S.C.E., A.S.T.M., N.S.P.E., A.S.E.E., the Kansas Engineering Society, the Highway Research Board, Sigma Xi, and Phi Kappa Phi.

Charles H. Scholer

He is the author of many articles on concrete and co-author of a paper on fly ash which won the Wason Medal in 1952.

Other A.C.I. officers announced include the following: Frank Kerekes, assistant dean, division of engineering, Iowa State College, vice-president (two years); and Phil M. Ferguson, department of civil engineering, University of Texas; Joseph F. Jelley, director of construction, Department of Defense, Washington, D. C.; H. C. Ross, Hydro-Electric Power Commission of Ontario, Toronto, Ont.; and George W. Washa, professor, department of mechanics, University of Wisconsin, all elected for two-year terms as vice-presidents. Charles S. Whitney, Ammann and Whitney, New York, N. Y., and Milwaukee, Wis., elected for a two-year term as vice-president in 1953, continues in that post.

R. C. Collins Successor Of Herbert G. Jahncke As N.R.M.C.A. President

Robert C. Collins, Philadelphia, Pa., was elected president of the National Ready Mixed Concrete Association at the 38th annual convention of that organization, held in Chicago February 15 to 19. Mr. Collins succeeds Herbert G. Jahncke of New Orleans, La. Other officers chosen to serve for the coming year included the following: Louis C. Schilling, Miami, Fla., first vice-president; Robert Mitchell, Los Angeles, Calif., second vice-president; and John Roberts, Norfolk, Va., treasurer. See our cover for a picture of these N.R.M.C.A. officers, and of the plaques presented to safety-contest winners by the CONCRETE MANUFACTURER.

Those named to serve on the executive committee are Frank Penepacker, Portland, Oreg., F. E. Schouweiler, Fort Wayne, Ind., William J. Hicklin Jr., Jacksonville, Fla., and Murray S. Simpson, Washington, D. C.

By unanimous vote the members gave consent to a proposal to increase the number of directors from 18 to 24. Our April issue will carry a full report of the convention proceedings.

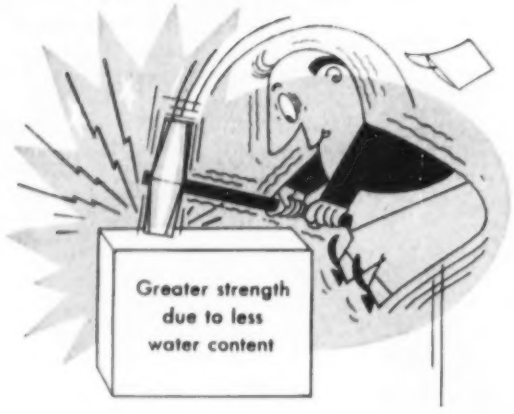
Universal Concrete Pipe Co. Renames Plant at Louisville

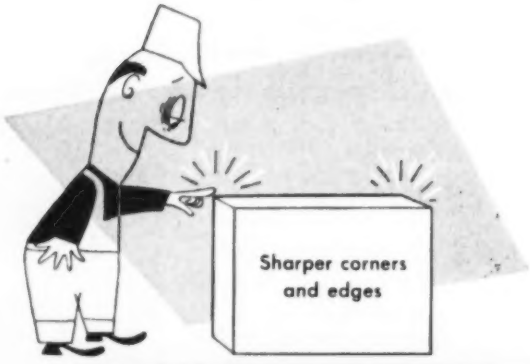
Universal Concrete Pipe Company, with home offices at Columbus, Ohio, is changing the name of its plant at Grade Lane, Louisville, Ky., from the Dixie Concrete Pipe Company to the Universal Concrete Pipe Company. Frank Emch is manager of the plant; James Graves is sales representative; and Sam Hayes, office manager.

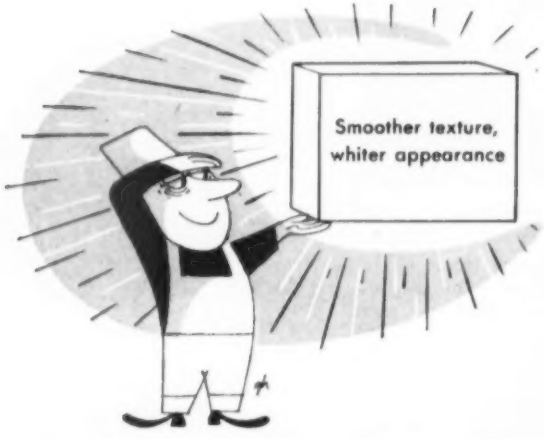
Universal, which operates a network of 26 concrete product plants in 12 states, recently became a subsidiary of American-Marietta Company, Chicago.

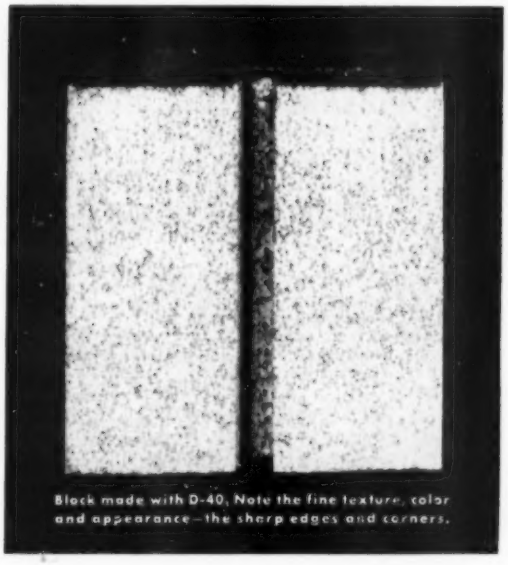
Ben Gurney, Madison Silo Company, Madison, Wis., was recently elected president of the National Association of Silo Manufacturers at its annual convention in Chicago. In this office he succeeds C. B. Ross, vice-president in charge of production of the Marietta Concrete Corporation's Baltimore plant. Mr. Ross has been with Marietta for 27 years and has headed the Baltimore operation for the last 14 years.

STRONGER concrete blocks









Block made with D-40. Note the fine texture, color and appearance—the sharp edges and corners.

with low-cost D-40

Ask us about the outstanding results concrete block manufacturers are getting by adding one to two ounces of dry, granular D-40 per bag of cement at the mixer. D-40 not only will help you make a greatly superior product but at the same time will reduce your operating costs.

D-40 is a ready-to-use additive supplied in economical 85# bags—available at conveniently located supply points throughout the United States.

Ready-mixed concrete producers have also found D-40 improves their product

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Toronto Meetings Show World-wide Interest In Prestressed Concrete

The first Canadian Conference on Prestressed Concrete was a decided success with about 450 delegates and representatives from all over the world attending. Papers touching on almost every facet of prestressed concrete construction were presented. The conference was held at Hart House Theatre, University of Toronto, January 28 and 29.

The first paper posed a series of questions by R. F. Shaw, vice-president of The Foundation Company of Canada and president of the Corporation of Professional Engineers of the Province of Quebec. In his discussion he undertook to show why prestressed concrete should be used. Styling himself as one of the "doubters" — not-yet-convinced architects, engineers, contractors, competitors, code writers and owners — he asked many pentrating questions, probing for weaknesses in the case for prestressed concrete. Lively discussion was provoked as a result.

A. T. Waidelich, vice-president and manager of research, The Austin Company, Cleveland, Ohio, gave results of strain gauge tests on two prestressed concrete beams, tested to the destruction point by his company. Mr. Waidelich had illustrations that provided valuable data on load tests for two beams, one about 40 ft. long, the other 60 ft.

Coming Events

March 8-10, 1954—St. Louis, 48th annual convention, Autoclave Building Products Association. Hotel Jefferson.

March 15 and 16, 1954—Chicago 12th annual meeting, Mid-West Ready-Mixed Concrete Association. Drake Hotel.

March 18-20, 1954—Chicago, Midwest Concrete Exposition, sponsored by the Contractors Association of Greater Chicago. Navy Pier.

June 13-18, 1954—Chicago. Annual meeting, American Society for Testing Materials. Eleventh exhibit of testing and scientific apparatus and laboratory supplies and ninth technical photographic exhibit. Sherman and Morrison hotels.

June 20-27, 1954—Brussels, International congress of concrete products manufacturers.

For the benefit of members gaining their first knowledge of the prestressed concrete field, a paper presented by Harold Fealdman, assistant engineer, research, of the Hydro Electric Power Commission of Ontario, reviewed prestressed concrete basic theory. His remarks were intended as introductory for those not previously acquainted with prestressing, and as a recapitulation for those with some knowledge of the field.

Two staff members of Ontario Hydro, R. B. Young and J. N. Mustard, presented a paper on quality control of concrete and suggested specifications, which urged close supervision by competent personnel during construction of prestressed concrete products.

Closely linked with this address was a paper by Professor M. W. Huggins on quality control of steel for prestressing, and suggested specifications. Professor Huggins is with the Department of Civil Engineering, University of Toronto.

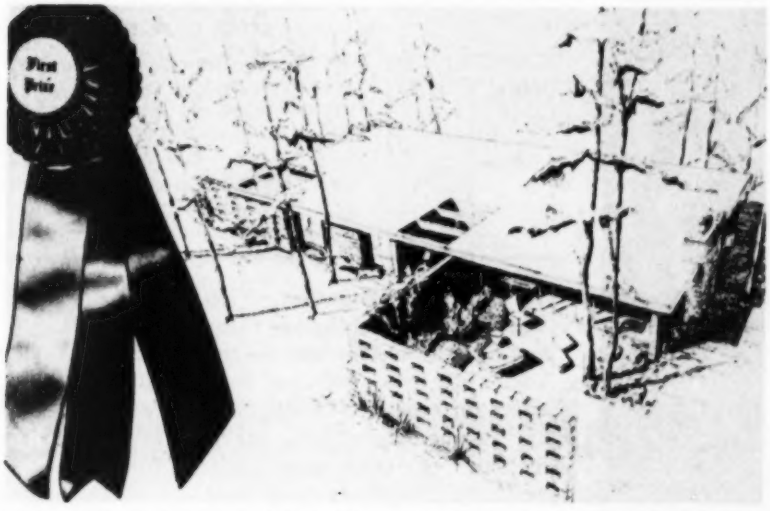
Professor G. Magnel, member of the Royal Belgian Academy and professor of reinforced concrete at the University of Ghent, Belgium, gave the conference an international atmosphere by reviewing European practices in the field of prestressed concrete. He came out strongly against specifications or codes in the field of prestressed concrete. Said Prof. Magnel, "We must await further applications of prestressed concrete before we can judge what is acceptable though still economical."

Dr. T. O. Lazarides, Lazarides, Lount & Partners, Structural Consultants, Toronto, introduced what he termed a new concept, that of "a statically indeterminate material", which was outlined for the first time at the conference.

A report on the research that has been done on prestressed concrete was presented by A. L. Parme, Structural and Railways Bureau, Portland Cement Association, Chicago. Mr. Parme pointed to the many questions that still are unanswered in the prestressed field.

Finally, conference delegates were given an opportunity to ask questions of the experts in a panel discussion under the chairmanship of Dean K. F. Tupper, a member of the faculty of applied science and engineering at the University of Toronto. Those taking part were Mr. Shama, Y. Gruyon of France, Professor Magnel, J. J. Mennis, Dr. Lazarides, and E. P. Muntz, consulting engineer, Ontario Hydro.

Many of the delegates stayed to hear Robert Shama on January 30. Mr. Shama is managing director and chief engineer of Empresas Campenon Bernard de Venezuela, of Caracas, Venezuela. His paper, presented before a joint meeting of the Royal Canadian Institute and the Toronto Branch of the Engineering Institute of Canada, discussed the prestressed concrete arch bridges in Venezuela.



● This sketch is a dream view of the $1,000 prize-winning home design in a competition recently concluded by the North Carolina Chapter, American Institute of Architects. Announcement of the winning design, the work of Stuart Baesel of Charlotte, was made at a social hour given by the North Carolina Concrete Masonry Association, sponsors of the program. Mr. Baesel's design was judged the best of 62 entries. A second prize of $750 was won by Robert W. Richardson, also of Charlotte. Purpose of the competition was "to apply the value of architecturally trained effort to the design of homes within the financial reach of that large segment of the home seeking public known as the limited income group, and to stimulate in the public mind a further desire for architectural services in home design".

QUALITY CONTROL *highly recommended by*

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INDUSTRIES, INC.

"We have no hesitancy in recommending your (Forney) machine to anyone who is interested in maintaining at all times the highest quality blocks and concrete that it is possible to produce, states Mr. F. Paul Anderson, Vice-President of Maule Industries, Inc., Miami, Florida. A Forney Compression Tester keeps your block quality high and your costs low by increasing yield. Forney's copyrighted direct reading dial eliminates guess work, gives you accurate data on your manufacturing operations. Forney's Compression Tester helps you to improve customer relations and this increases sales. Your customers are assured of top quality at all times through your daily testing in your own plant." Write for complete details and illustrated brochure today.

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September 28, 1953

Forney's, Inc.
203 Elm Street
New Castle
Pennsylvania

Gentlemen:

The compression machine that we purchased from you during the latter part of 1952 was immediately installed in our laboratory and has been of great assistance in our program of quality control in both our ready-mix concrete and our concrete products.

It is extremely accurate for we have cross-checked our testing procedure with the various independent laboratories here in Miami.

We have no hesitancy in recommending your machine to anyone who is sincerely interested in maintaining at all times the highest quality blocks and concrete that it is possible to produce.

Very truly yours,

MAULE INDUSTRIES, INC.

F. Paul Anderson,
Vice-President

FPA:ct

FLORIDA'S LEADER IN QUARRY CONCRETE PRODUCTS AND BUILDERS' SUPPLIES

Mr. F. Paul Anderson, Vice-President of Florida's leader in Quarry Concrete Products, has high praise for the Forney Compression Tester his firm purchased in 1952. Read his letter for complete details. Then order a Forney Compression Tester for your plant and increase your block quality control.

FORNEY'S, INC.

MANUFACTURERS OF SPECIAL MACHINERY SINCE 1916
203 Elm St. New Castle, Pa.

Help! Help!

A get-together department for those who have problems or queries concerning the concrete industries and those who (we hope) have the answers. Please address all communications to The Concrete Manufacturer, 431 South Dearborn Street, Chicago 5, Ill.

Colored Aggregates We are still receiving replies to our inquiry for sources of supply of colored aggregates. The Superior Rock Products Co. of Sagola, Mich., is able to supply natural colored white, gray, pink, and black aggregates in a full range of sizes. The Rising & Nelson Slate Co., Inc., of West Pawlet, Vt., advises that they have available good quantities of red and green slate screenings in the minus 20-mesh size range.

Slide Rules The item concerning concrete slide rules, which appeared in this department several months ago, has drawn several responses. As nearly as we can judge, most of the firms in this field are prepared to make up rules to the purchaser's specifications, and the chief requirement seems to be to be able to place a sufficiently large order to hold the unit price within reasonable limits. We have information concerning the following firms: Delta Industries, 2114 W. Grand Ave., Chicago, Ill.; Cook's Advertising Service, P.O. Box 104, Hazel, Ky.; Minneapolis Specialty Co., 2613 Stevens Ave., South, Minneapolis 8, Minn.; and Bastian Brothers Co., Rochester, N. Y.

Block Mold A reader would like information on where he may purchase a mold for casting 35 standard 8- by 8- by 16-in. units at a time. He has seen such a mold in use, and says that it incorporates collapsible cores to facilitate stripping *after* the concrete has hardened. Special inserts make it possible to produce smooth face, rock face, or raised face units.

Value of Calcium Chloride In Cold Weather Concreting

Many engineers visualize snow and ice when they think of cold weather concreting. Actually, any time the temperature dips below 70 deg. F. in the 24 hours after placing concrete, a lag in strength gain takes place. This fact was pointed out in a recent information brief of the Calcium Chloride Institute entitled "Calcium Chloride for Concrete Construction."

According to the institute, calcium chloride has been used extensively for more than 25 years as an admixture in portland cement concrete to improve its quality and to reduce constructions costs. At normal temperatures, the addition of 2 lb. of calcium chloride per bag of cement will reduce by one-third the time required for both initial and final set. Time reductions will be even greater at lower temperatures. For example, at 40 deg. F. calcium-chloride-treated concrete has strength in one day equal to plain concrete at three days. (See accompanying graph). The additional advantage of calcium chloride in temperatures below 70 deg. F., is in the increased rapidity with which it causes development of heat. While the total heat liberated by cement with or without calcium chloride is about the same, the initial rate is accelerated when calcium chloride is used.

Calcium chloride is said to function equally as well with air-entrained concrete as it does with plain portland cement concrete. It makes up for the lag in strength gain caused by the entrainment of air and has no adverse effect on the increased durability which normally results.

For further information on this subject request a free copy of Brief CB-4 "Calcium Chloride for Concrete Construction" from the Calcium Chloride Institute, 909 Ring Building, Washington 6, D. C.

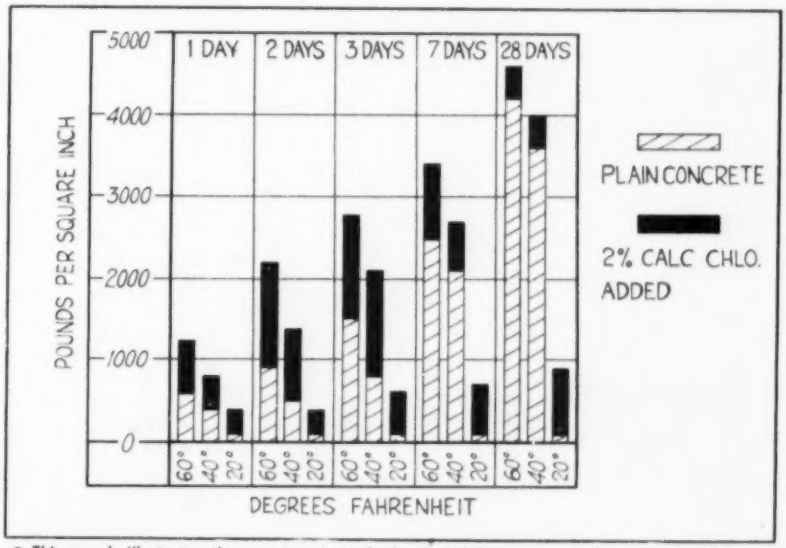
Winners of A.C.I. Awards And Wason Medal Cited At 50th A.C.I. Meeting

J. H. A. Crockett, Phil M. Ferguson, Alden M. Klein, J. Neils Thompson, and David Watstein received A.C.I. awards from President Henry L. Kennedy at the 50th annual convention of the American Concrete Institute, held at the Shirley-Savoy Hotel, Denver, last month.

Alden M. Klein, assistant manager, New York district, Robert W. Hunt Co., New York, N. Y., and J. H. A. Crockett, civil and structural engineer, London, England, received the A.C.I. Construction Practice Award for their paper, *Design and Construction of a Fully Vibration-Controlled Forging Hammer Foundation*, which appeared in the January, 1953, A.C.I. *Journal*.

David Watstein, assistant chief, Structural Engineer Section, National Bureau of Standards, Washington, D. C., was the choice for the Wason Medal for "the most meritorious paper" of A.C.I. *Proceedings*, V. 49, *Effect of Straining Rate on the Compressive Strength and Elastic Properties of Concrete*, which appeared in the April, 1953, A.C.I. *Journal*.

Phil M. Ferguson and J. Neils Thompson received the Institute's Wason Medal for "noteworthy research", reported in the paper, *Diagonal Tension in T-Beams Without Stirrups*, in the March, 1953, A.C.I. *Journal*. Both are associated with the Civil Engineering Department, University of Texas.



● This graph illustrates the greater strength developed by concrete when calcium chloride is added, regardless of temperature. At 70 deg. F. the use of 2 percent calcium chloride results in saving one-half the time required for concrete to achieve given strength. At lower temperature the time saved is proportionately much greater; for example, the graph shows that at 40 deg. F. calcium chloride-treated concrete develops strength in one day about equal to plain concrete at three days (about 800 p.s.i.).

CANADIAN NEWS LETTER

CITIZENS of Alvinston, Ontario, faced with the problem of obtaining enough concrete blocks to erect a building to house the artificial ice-making equipment for their arena, came up with an ingenious answer.

Many of the main business houses in the community displayed a concrete block, along with an explanation that 25 cents represented the purchase price of a block, and that the blocks would be delivered to the arena.

At last report, there were enough blocks on hand to finish the building, and work was fast nearing completion.

A MEETING which attracted 90 top engineers, soil scientists, and geologists from all parts of Canada was held in December in Ottawa. It was the two-day Seventh Annual Canadian soil mechanics conference, sponsored by the Associate Committee on Soil and Snow Mechanics of the National Research Council, a Canadian Government agency.

One development of special interest to Canadian builders described at the meeting is a freezing index map prepared by the Department of Transport, which will make it possible to predict frost depth in many parts of Canada.

The necessity of defending Canada's vast northland against possible attack over the North Pole has sparked interest in research on building under frost conditions.

THE performance of different types of building materials under severe flood conditions has been summed up in an illustrated report prepared by the Division of Building Research of the National Research Council.

It is one of the most comprehensive reports of its kind, based on damage caused by the Winnipeg flood of 1950. In that year about 10,000 houses were inundated when the Red River went on the rampage, threatening the entire city.

The report is impartial, drawing no conclusions, but giving factual statements on how the building materials concerned stood up to partial or total immersion by flood waters for considerable period of time.

"Reinforced concrete basement walls and their footings withstood the flood without damage. The same can be said of those walls constructed of plain concrete or well-built stone masonry which had been in good condition prior to the flood . . ."

"Most of the floors examined were of plain concrete, 3 to 4 in. thick. Many floors had heaved and cracked to the extent that surface drainage was impaired. Swelling of the clays under floors was the cause of the damage. The amount of heave appeared to be related to soil loading conditions, the greatest heaving occurring under light soil loading, e.g., basement floors, and practically none under heavy loading conditions, e.g., basement walls. The effect of the heave was noted in many parts of the superstructure where direct structural contact existed between floor and superstructure."

"Masonry walls, including brick, stone blocks, and stone rubble walls, were undamaged. Mortar did not wash out from between courses . . ."

"Asphalt tile tended to lose its bond with the floor. Where installed on concrete or a similar rigid type of floor, the tile itself was not seriously damaged . . . Cork tile, where laid on concrete slab floors, showed no damage . . ."

"We'd better look this up in the manual . . . huh?"

1,102,400 Housing Starts Estimated for U.S. in 1953 By Labor Dept. Bureau

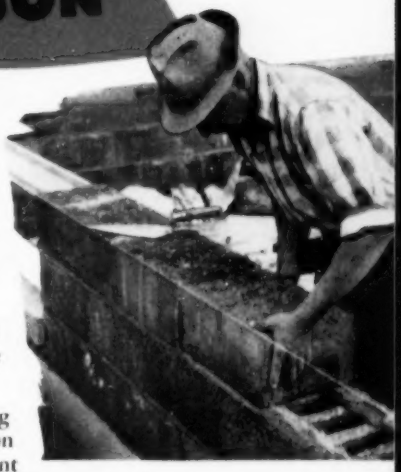
Housing starts exceeded the 1,000,000-mark for the fifth consecutive year in 1953 when 1,102,400 new permanent nonfarm dwelling units were put under construction, according to preliminary estimates of the U. S. Labor Department's Bureau of Labor Statistics. The total was only 2 percent under the final estimate of 1,127,000 for 1952 — the second-best housing year on record; virtually all of the 1952-53 decline was in public housing. The all-time peak of 1,396,000 starts occurred in 1950.

Privately owned new housing in 1953 totaled 1,066,900 units, about the same number as in 1952. Seasonally adjusted, the annual rate of private starts in 1953 exceeded 1,100,000 units during 5 months of the year (including December), and was above 1,000,000 for all months except August, when activity was adversely affected in some sections of the country because of work stoppages. New public housing in 1953, by contrast, dropped by 39 percent from 1952 to 35,500 units.

Although housing starts in 1953 declined almost steadily from the peak in April, the rate of decline in the closing months of the year was less than seasonal. An estimated 68,000 units were begun in December, 12,000 less than in November-December, 1953. Decline in private housing occurred in sections of the country that were most affected by the onset of winter weather, particularly the North Central states. Increases from November were reported for the West South Central and Mountain states; in the South Atlantic region activity was about the same in December as in November.

Final estimates now available for the first 9 months of 1953 indicate that more privately owned one-family houses were begun during that period than in the comparable months of any year except 1950. Also there was a 15 percent rise from 1952 to 1953 in the number of new units in private owned multi-family apartment buildings begun during the first 9 months, but a small decline in two-family housing.

A Salute to the CONCRETE BLOCK MASON

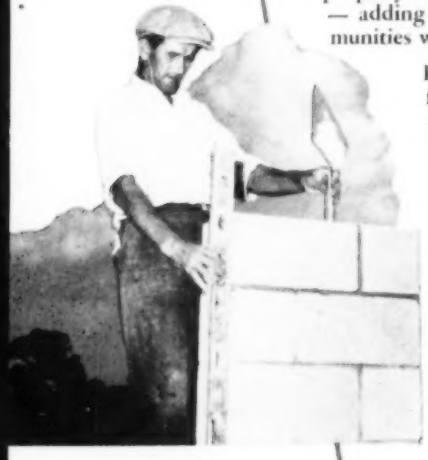


While the Concrete Block Mason is not altogether the "forgotten man", he has nevertheless failed to receive the honor and recognition to which he is entitled. Without the Mason, there would be no Concrete Masonry construction!

It is the *Mason* who translates the Block Producer's output into practical fulfillment of the purposes for which his products are designed and made.

It is the *Mason* who "brings to life" the dreams of the men and women who create, on paper, the wonderful buildings that serve as monuments to their Designers and Builders.

It is the *Mason* who carries out the instructions of the Building Contractor, laying course on course, block on block from foundation to roof. Through his labor and craftsmanship, he transforms vacant property into fine homes, commercial buildings and great public structures — adding beauty, shelter and greatly enhanced property values to all communities where he works.



It is the *Mason* who enables such concerns as the Besser Manufacturing Company to capitalize their great investments in plants and machinery — in order to provide the ultimate Masonry Units that constitute the very foundation of his trade.

And so, on this fiftieth anniversary of the Besser Era of Concrete Masonry Progress, we *salute* the Concrete Block Mason as a man among men; a doer of great deeds; a craftsman whose talents and energy bring to fruition the thinking, planning and work of Designers and Architects — to provide the means for the exercise of his labor and skill.

And by this token, too, the *Mason* has a great and continuing responsibility. He must be imbued with a pride of craftsmanship that impels him to do his work with the greatest skill and care of which he is capable. He must lay his Block true and spread his mortar uniformly, effectively and economically. He must point up his mortar joints cleanly to create, with the feel of a true artist, a structure to which he may always point with pride and say: "It is my *best* — let no man find fault with this, my work!"

And just as we, as manufacturers of Block Machinery, and the Block Plant Operator, as a manufacturer of Masonry Units, must constantly strive to *improve* on our past best efforts . . . so also must the *Mason* strive to do his work constantly better and improve on *his* past best efforts.

While no bronze plaques are placed on the buildings the Mason helps to erect, in honor of his service, he is yet a man who deserves our plaudits and respect. And for his benefit, to lighten his labor wherever possible, it is our constant aim to design and build machines which, in turn, will produce block that is easier to handle, easier to lay, and more beautiful to look at in the final creation of a building. This, too, becomes a tribute to the Mason's skill and craftsmanship.

So we Salute the Mason, wherever he may be, as the man on the "firing line" — a great man on the Concrete Masonry "Team".

BESSER MFG. CO. • ALPENA, MICH., U.S.A.

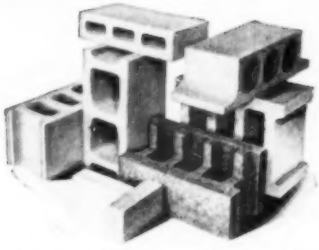
BESSER
50th Anniversary
1904-1954

...a Half Century of Concrete Masonry Progress!

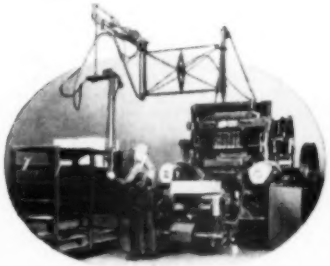
Build Better with VIBRAPAC Block

Perform Modern Masonry Miracles on Both Exteriors and Interiors

A half century of scientific progress in quality control has won universal respect for VIBRAPAC Block. The functional qualities of these Modern Masonry Units, plus their wide range of practical adaptability, have inspired the most advanced creative construction. Many years of research have paved the way for lightweight aggregate and perfected VIBRAPAC manufacturing processes. As a result, structural loads are reduced without sacrificing rugged, constructional security. Firesafety — stormsafety — insulation against heat and cold — acoustical and soundproofing qualities — low initial cost — low upkeep. All these are added advantages. Yes, you'll be proud of the modern masonry miracles you can perform with VIBRAPAC Block.



A few of the many standard modular building units engineeringly sound, architecturally beautiful, for top quality construction at low cost.



BESSER VIBRAPAC — the fully automatic concrete block machine. Produces high quality masonry units, of any desired texture and density, at the lowest possible cost.

CONCRETE BLOCK PLANTS: This is one of a series of advertisements prepared by Besser and appearing currently in *Architectural Record, House & Home, Progressive Architecture, Architectural Forum, Engineering News-Record, American Builder, Masonry Building* and *Practical Builder*. We hope these advertisements will help all Block Plants in developing new markets for Concrete Masonry—the modern building material.

BESSER MFG. CO. • ALPENA, MICH., U.S.A.

...a Half Century of Concrete Masonry Progress!

Rx Ready Mix

By Harry F. Thomson

Chuting Well Controlled Concrete

THE specifications for a large reinforced concrete building provided that the owner would furnish the general contractor with ready-mixed concrete purchased from a commercial central-mixing plant located about ½ mile from the project. The building was six stories and basement, about 200 ft. square. The owners' specification for the concrete also named a maximum water-cement ratio of 6½ gal. per sack for 5½ sacks per cu. yd. of concrete. With the aggregates available this water content produced a slump of about 4 in. The owners provided a resident inspector to check on all materials.

Shortly after the general contract had been awarded, the head of the successful contracting firm was watching a delivery of concrete from the same central-mixing plant which was to supply his job. The contractor asked a representative of the concrete company how much wetter his concrete would be; when told that his concrete, mixed according to the specification, would be very similar to what he saw being placed in curb and gutter, he exploded with the remark, "We can't chute that concrete! You will have to give us a great deal more water."

The fact was that the contractor had already arranged for tower-and-chute equipment for handling the concrete on this building; he admitted that he had failed to appreciate the significance of the specified limit of 6½ gal. of water, and that that limit would be enforced. As it was too late to change his arrangements for equipment, he made an urgent appeal to the owners to allow more water. Their structural engineer finally authorized an increase of ¼ gallon, making a maximum of 6¾ gal. per sack of cement; and the ready-mixed concrete was furnished accordingly.

All parties concerned were delighted when it was found that the concrete, though stiffer than the contractor had requested, was handled in the long chute beautifully; it met one of the best tests for good, well-proportioned material in that a uniform depth of concrete moved down the chute slowly—no mortar ran ahead, segregating from the coarse aggregate; when a bucket-load was dumped at the tower, a similar quantity was discharged at the bottom of the chute. Of course, the ready-mix company watched the grading of aggregates very closely, insisting that the suppliers furnish materials within close tolerances of the agreed grading specifications.

By judicious use of vibrators, the contractor—much to his surprise—obtained excellent surfaces for columns and ceilings, with practically no honey-comb. The resident inspector for the owners, who had come from an area using very wet concrete in multi-story building and accepting the extra coat of extensive patching as a necessary evil, also expressed surprise and satisfaction at the very small amount of patching necessary on this job. He stated his conviction that fairly stiff concrete, made with properly proportioned and well-graded aggregates, accomplished cheaper construction than was possible with wet, sloppy concrete.

The job results fully justified the insistence of the structural engineer that the ready-mix be furnished in accordance with the original specification, with only a slight increase in the water content.

William F. Atkins Promoted To Lehigh Executive Post

William F. Atkins has been elected vice-president and sales manager of Lehigh Materials Company, Lansford, Pa., producers of Lelite lightweight building aggregate, it was announced by Glenn O. Kidd, president of the company. Mr. Atkins was a manufacturer's agent in brick, tile, and masonry units at Erie, Pa., before joining the Lelite organization in April, 1952.

A member of the National Concrete Masonry Association, the American Society for Testing Materials, and the American Concrete Institute, Mr. Atkins has been active in research work for lightweight construction materials.

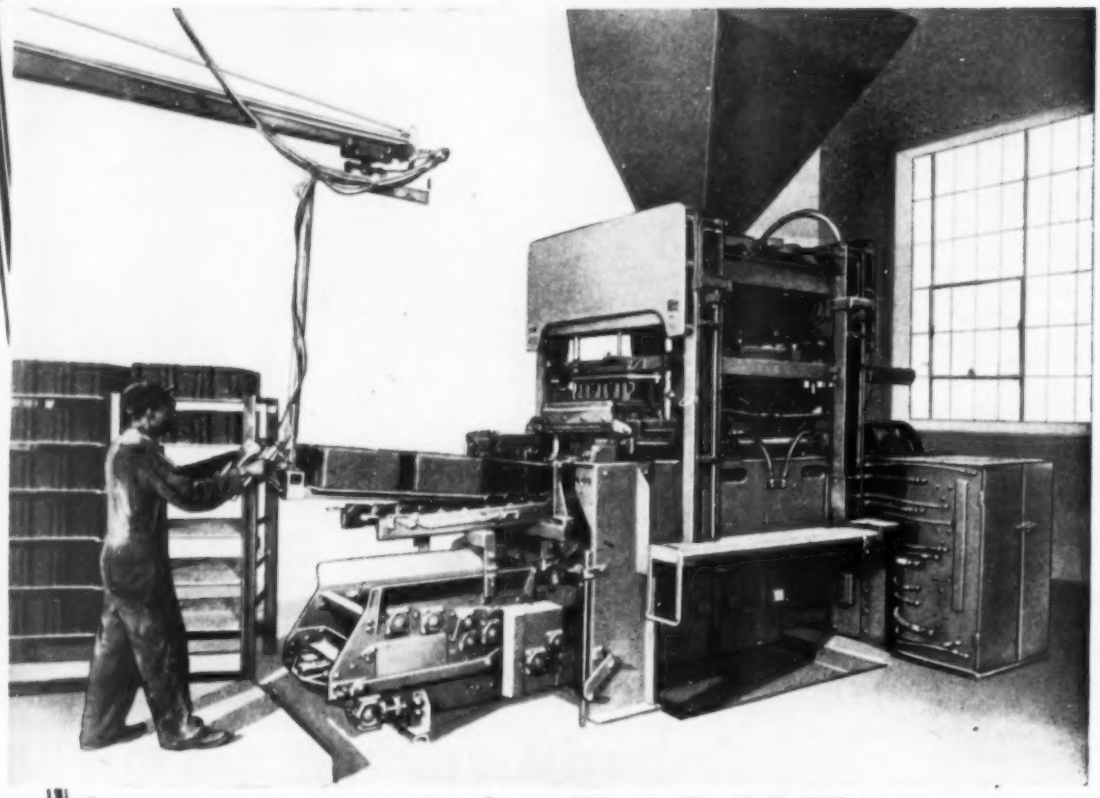
January Housing Starts Dip 3% from December

Nonfarm housing starts declined slightly (3 percent) from December to 66,000 units in January, according to preliminary estimates of the U. S. Labor Department's Bureau of Labor Statistics. Private housebuilding activity continued strong except in sections of the country most affected by extremes of weather. Declines in the Atlantic seaboard states and in the mountain and west north central regions were almost offset by gains in other sections of the country.

Privately-owned housing starts totaled 64,700 in January, 5 percent under the figure for January, 1953, when activity was at a relatively high level after a contraseasonal rise in the fall of 1952, following the relaxation of mortgage credit controls. Moreover, the weather was comparatively mild a year ago, a circumstance which permitted more work to get under way.

● On a mountainside in Japan this C. S. Johnson-designed twin batching ready-mix-concrete and refrigeration plant is mixing and pouring concrete for Ogochi Dam, backbone of a new 200,000,000-gal. reservoir which will serve Tokyo. Some of the machinery used was built by C. S. Johnson years ago for the construction of Hoover (Boulder) Dam; the rest was made in Japan by Ishikawajima - Koehring Co., Ltd.

The "King" RULES



"because it's RIGHT!

Yes, the GOCORP "King" is tops in each area in which it operates. That's because the blocks it makes are so superior, and are produced at a cost less than ordinary blocks. Here's a machine that represents the best and latest thinking of men with a lifetime of experience in this field. Block plant owners who have investigated, like the owner of this typical "King" operation, recognize these advantages GOCORP offers:

- Hydraulic "sequence operation"— for high quality blocks, low maintenance.
- Vibrating mold filled directly from main supply hopper—no feed drawer.
- Intense vertical vibration, combined with pallet-to-mold clamping, assures compact, uniform units.
- "Tomorrow's machine today" — removes obsolescence risk.

These are only a few reasons why the GOCORP "King" rules. If you want three or four cycles per minute—six blocks per cycle—with one operator—simultaneous production of two sizes, if desired—write for further details on the "King" and name of our representative near you.

GO CORP
ADRIAN-MICH.
[illegible] Adrian, Michigan

Paturzo, N. C. M. A. President, Addresses Mason Contractors

IN AN address presented before the Mason Contractors Association of America in Chicago on January 26, Sam Paturzo, N.C.M.A. president, told his audience that, according to a survey of the concrete masonry industry made by PIT AND QUARRY, this industry has nearly quadrupled its annual production since 1941. In that year the output was about 500,000,000 8-in. equivalents; in 1953 the figure had ballooned to 1,800,000,000.

Discussing the reasons for this outstanding record, Mr. Paturzo had this to say: "Probably the most important reason is the economy affected by the use of our products in building masonry walls. Probably the second most important reason is the fact that through the use of our products very pleasing wall finishes are obtained, to the end that for many types of projects the need for plaster or stucco has been eliminated." Other factors contributing to the popularity of concrete masonry units which were mentioned by Mr. Paturzo are its availability, insulation and sound absorption qualities, nailability, etc.

The distribution of the industry's total output among various types of uses was summarized as follows: 57.9 percent for non-residential, 37.3 percent for residential, and 4.8 percent for government uses.

"During the period of enlarged production most of the members of our association have made very heavy investments in the way of land, building, and machinery," Mr. Paturzo stated . . . "Increases in the price of our commodities have lagged . . . behind the general level of prices for materials in the building materials field. The prices of our products have been kept low because of the heavy investments in modern machinery . . . and insofar as the efficiency of our manufacturing operations and its relationship to cost of manufacture is concerned, we have gone about as far as we can expect to go. . . . Whether our industry makes further progress by way of increased production depends most upon what happens when the product leaves our hands. We must depend upon fair quotations for placing our products in the walls, and in this regard, we must ask the most friendly attitude on the part of . . . mason contractors and the operative bricklayers they employ."

He mentioned the loss of volume (to the masonry industry) in the basement market, which was brought about by the fad of "economizing" *via* basementless building and poured concrete construction. In Mr. Paturzo's opinion, however, especially in the northern states, there is a swing back to the inclusion of basements in home construction. He pointed out that if the trend is swinging back, block manufacturers and mason contractors should be able to share in the business which will thus be made available. "It behooves all of us to do whatever we can to keep the finished cost as low as possible," he urged.

William Nelson, president of M.C.A.A., and John Murphy, secretary of the Bricklayers, Masons, and Plasterers International Union, who were scheduled to deliver addresses at the N.C.M.A. convention in Washington, were cited as exponents of a fine trend toward much-needed co-operation among these groups.

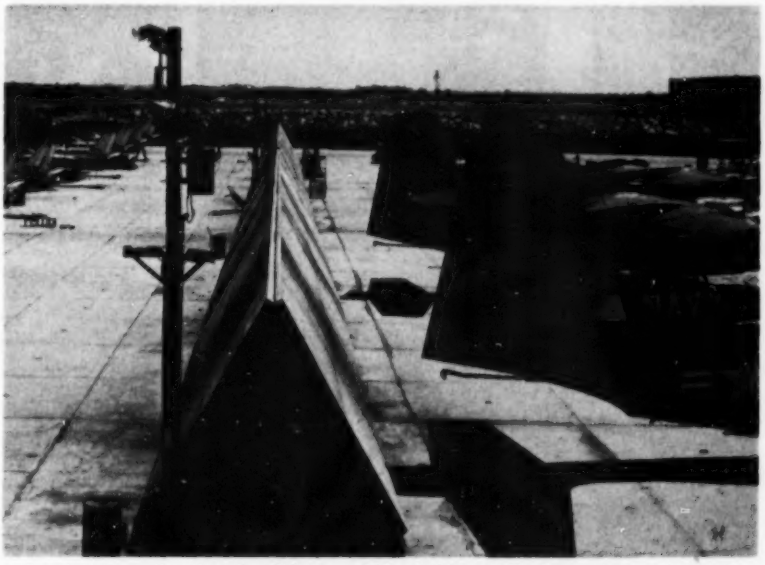
In anticipating keener competition in the near future, said Mr. Paturzo, N.C.M.A. is increasing its budget by about 50 percent this year in order to publicize the merits of concrete masonry wall construction in magazines and trade papers.

Mr. Paturzo expressed his concern over the fact that neither the clay products industry nor the concrete masonry manufacturers has been successful in overcoming the preponderance of wood construction for new homes, except in a few specific areas. "It may very well be," he warned "that if the cost of job-site labor continues to rise to a point where we lose the economy part of our claim for consideration, we will price ourselves right out of the market."

Curtiss, Haley, Pullin Win Universal Promotions

W. F. Curtiss

Universal Concrete Pipe Company announced three personnel promotions. William F. Curtis, who joined Universal in 1945 and served as office manager and acting manager, has been named manager of the Columbus plant. William A. Haley, formerly at the Rochester, N. Y., plant, has been made sales engineer of the Syracuse district. George Pullin, who transferred from West Virginia operations, will handle sales in New York's Westchester county.



● Jet aircraft produced at the Columbus, Ohio, Division of North American Aviation, Inc., now receive pre-flight tests after final assembly with the aid of 5-in. precast concrete wall panels made by The Marietta Concrete Corporation of Marietta, Ohio. The panels are believed to be the first so used. Rows of blast walls, triangular in cross-section, stretch across the test area. Barriers of heavy timber or steel framing are secured to a concrete apron and precast concrete wall panels are bolted to the frame. Completed aircraft are wheeled into position in rows with their tailpipes about 20 ft. from the blast wall. Engine runs can thus be accomplished without danger to personnel or other aircraft. Marietta panels even though exposed to all conditions of flame erosion and reverberatory vibration, reportedly have successfully withstood the full forces and high temperatures of jet blasts. The 5-in. thick panels are made of Marietta's own lightweight aggregate, "Beslite", a factor in designing concrete mixes to withstand the severe temperatures.

Block Industry Holds Outstanding Convention in Nation's Capitol

another ON THE SPOT report

Approximately 1,100 delegates were present at the 34th annual meeting of the National Concrete Masonry Association, which was held at Washington's Shoreham Hotel on February 8, 9, 10, and 11. First major event of the convention was the election of officers. M. E. Rinker, Rinker Materials Corporation, West Palm Beach, Fla., took office as the new president; he will head the association until the 35th annual meeting in 1955. Other new officers elected include the following: R. I. Lampus (R. I. Lampus Co., Springdale, Pa.), W. R. Ireland (Birmingham Slag Co., Birmingham, Ala.), and S. Carl Smithwick (Smithwick Concrete Products, Portland, Oreg.), vice-presidents. Carroll Strohm Jr. (Nashville Brecko Block and Tile Co., Nashville, Tenn.) was re-elected secretary-treasurer.

In the directors' echelon the following were newly elected: R. H. Radcliff Jr. (Radcliff Gravel Company, Inc., Mobile, Ala.), Jay C. Ehle (Cleveland Builders Supply, Cleveland, O.), and E. E. Jensen (Janesville Sand and Gravel Co., Janesville, Wis.). Other members of the board of directors include the following: Harry M. Frank (Atlas Building Products Co., El Paso, Tex.), Leon K. Camp (Camp Concrete Products Co., Columbus, Ga.), W. A. Neff (Neff Concrete Products Co., Danville, Ill.), Earl W. Peterson (Ideal Cement Stone Co., Omaha, Nebr.), Philip Paolella (Plasticrete Corp., Hamden, Conn.), Herbert J. Vincent (Cinder Block, Inc., Detroit, Mich.), A. R. Waters (Carter-Waters Corp., Kansas City, Mo.), and Edmund Brooke (National Brick & Supply Co., Inc., Terra Cotta, D.C.).

● N.C.M.A. has been fortunate indeed in the caliber of the men who have held top office year after year. At the Washington convention Sam Paturzo of Baltimore turned over the duties of president to M. E. Rinker of West Palm Beach, Fla.

● We've been trying for years to get the association's hard-working staff all together, and all slowed down long enough, for a group picture. Here they are, from left to right: Bill Markert, R. E. Copeland, Ted Leba, Evelyn Bouet, E. W. Dienhart, and Ed Mangotich.

DOUGLAS McKAY
Secretary of the Interior

Secretary of the Interior Douglas McKay told members of the Association how the Department of the Interior has applied sound management methods to achieve maximum economy and efficiency.

Citing the concrete masonry industry's production increase of 400 percent during a period of steadily rising material and labor costs as an example of "progress which is possible under our free enterprise system", Mr. McKay said:

"You have demonstrated that good management does overcome obstacles and does result in continuing success. Like you, we have tried to be good managers." He said that the Department's program in its first year resulted in savings in salaries at an annual rate of about $18 million.

"The Department's budget estimates for the fiscal year 1955 total $422,000,000, a reduction of more than $12,000,000 below the level for the current fiscal year. The 1955 budget," he said, "therefore reflects a reduction in appropriations of nearly $122,000,000, or 22½ percent, in two years."

Mr. McKay said that the Department, by making careful reviews of all major contracts, has prevented unnecessary expenditures. As an example, he said this type of economy saved nearly $200,000 in the procurement of automotive equipment alone.

Message of Retiring President Sam Paturzo

In discussing means and methods of maintaining and improving the enviable status of the concrete masonry industry Sam V. Paturzo, immediate past president of N.C.M.A., told his audience that all possible effort must be made to meet the recent desperate attempts of competitive materials manufacturers to regain lost ground. He mentioned competing new items such as SCR brick, long, narrow brick, and other special units introduced by the clay products manufacturers. "It is to our interest," he pointed out, "to do everything possible to advance our position or at least maintain it."

He stated that the year just past had been an unusually successful one, and lauded the fine work of the following: E. W. Dienhart, N.C.M.A. executive secretary; R. E. Copeland, director of engineering; William P. Markert, heading promotional work; and Ted Leba of the Washington, D.C., branch office. Their assistants and others working in the national organization were also given words of appreciation.

Concerning contacts made and maintained by N.C.M.A. with local, state, and regional associations, Mr. Paturzo mentioned that there are now 28 such groups throughout the United States. Members of the national staff, he said, took part in the meetings of 17 of these organizations. He reported that because of the wide diversity of objectives and methods of financing these groups, no decision had been reached on direct affiliation. "It is my profound belief," Mr. Paturzo declared, "that every manufacturer of concrete masonry units should support and get behind the work of the national association; and in addition he should support local, state, and regional associations."

According to Mr. Paturzo, the roster of N.C.M.A. numbers 521 active members, 88 associate members, and 48 contributing members; he expressed satisfaction over the financial standing of the organization.

Stressing optimism, aggressiveness, caution, and dynamic action as "musts" for the year ahead, Mr. Paturzo gave several specific suggestions to his hearers for anticipating a possible period in which "we will have more blocks than we can sell". He called attention to an undesirable trend in some plants in which "the number of blocks has become more important than the quality of the blocks made". He deplored the lack of proper and courteous handling of orders, an independent attitude engendered by the current prosperity of the industry. Among the pertinent points brought out by the speaker were the following:

1. Don't increase production volume at the expense of product quality.
2. Make it a point to offer special services to hold customers — for example, "special" units which will eliminate cutting and fitting and thus facilitate the customer's job.
3. Think and plan in terms of the future, not for a single year ahead.
4. Streamline your production.
5. Invest in plant improvements.
6. Study new methods of production and merchandising.
7. Promote a quality-conscious plant personnel.
8. Insist upon courteous and efficient handling of orders.
9. Analyze your own management routine. ("Get yourself into a private corner and have a healthy man-to-man talk with yourself," as Mr. Paturzo put it.)

Stockard & Peterson Report on Architectural Competitions

H. J. Stockard Jr., secretary-treasurer of the North Carolina Concrete Masonry Association, Raleigh, and Earl W. Peterson, Nebraska Concrete Masonry Association, Omaha, presented some interesting information on architectural competitions in their respective states.

Mr. Stockard explained that his association's home design competition had been recently concluded with the awarding of ten prizes totalling $3,100. He stated that the purpose of this type of competition had been primarily to encourage improved design in low-cost homes. In this contest 62 entries were received from architects, students, and draftsmen.

"This type of competition," Mr. Stockard stated, "seeks to apply the value of architecturally trained effort to the design of homes within the financial reach of that large segment of the home-seeking public — the limited-income group, and to stimulate in the public mind a further desire for architectural services in home design."

Mr. Peterson stated that one of the most important benefits derived from architectural competitions such as the Nebraska contest lies in the fact that architects who enter them will find it necessary to study and learn more about concrete masonry construction.

"We feel that this will result in more new home plans specifying concrete masonry in such a manner as to promote better built structures," he declared.

He mentioned that in addition to the objective of winning recognition and respect for concrete masonry units as building materials, state home design competitions can help to "focus attention on the architect as a valuable link in home planning".

The prize-winning plans in the two competitions were displayed during the convention session.

● A. F. Moore, Penn-Dixie Cement Corp., Mr. and Mrs. John K. Bush, Bergen Machine & Tool Co.; and Austin Crabbs, Austin Crabbs, Inc.

● A. H. Russell, The Burns & Russell Co.; L. E. Pfeiffenberger, Alton Brick Co.; and Glenn Whitman, The Burns & Russell Co.

R. E. Copeland on Recent Technical Developments

The highly mechanical and efficient manufacturing methods developed by the concrete masonry industry have made it possible for the industry to supply the market with better products at very reasonable prices. This was the report made by R. E. Copeland, director of engineering.

Mr. Copeland revealed at the meeting that the rapidly increasing use of concrete block construction for residences and buildings is due not only to the fire resistance, durability, and other desirable properties of the construction, but also to the modern uses introduced by the industry.

"These methods," Mr. Copeland said, "although requiring large outlays in expensive high-production equipment, have made it possible for the industry to supply the market with better products at very reasonable prices. Mechanical methods have now been developed to the point where block are being made, cured, and delivered to the brick mason's scaffold without being touched by human hands."

Explaining that some of the research being conducted on the design of reinforced concrete block masonry floors, roofs, walls, columns, and other structural factors will be of special interest to architects and engineers, Mr. Copeland said: "Concrete masonry is playing an important part in some of the major developments in prestressed construction."

He further told the convention that the association's research on the performance properties of block construction are essential to the industry. "It is also essential to architects, engineers, and builders whose preference for block construction accounts for a large part of the annual use of more than 1,750,000,000 8- by 8- by 16-in. block equivalents."

GUY T. O. HOLLYDAY
Federal Housing Authority

Pointing out that the FHA does not want to dictate what should be built, Guy T. O. Hollyday, commissioner for the Authority, told the convention: "Housing production and maintenance should fit the public needs and not be dominated by arbitrary requirements."

Mr. Hollyday pointed out that too many rules can mean mediocrity in design and failure to take advantage of modern improvements in materials and methods.

"Good design," he said, "has a wider scope than stereotyped colonial. Because of the enormous volume and nation-wide extent of FHA insuring operations, I believe the agency can exert a strong influence on the design of homes to meet present day standards of efficiency, economy, and enjoyment."

Citing the research program which is continually being studied by the FHA, Mr. Hollyday revealed that the agency is constantly exploring the possibilities of a greater contribution through new construction techniques.

● Left to right: Jack Duble, Pit and Quarry Publications; E. W. Bauman, National Slag Association; W. R. Ireland, Birmingham Slag Co.; and F. N. Steadman, Peerless Cement Corp.

● Glen W. Yonkie and George E. Gussett Jr.; both of Gussett Boiler & Welding, Inc.

● John Ruhling, American Concrete Pipe Association; and Glenn C. Barnes, Barnes & Cone, Inc.

E. W. Dienhart on the State of the Block Industry

"The year 1941 stands out as an important date in the history of our industry because during that year estimates showed that the production of concrete masonry units had for the first time equalled the wall volume of clay brick and tile.

"Our production in 1941 was estimated at 500,000,000 8-in. equivalent sized units. This is equivalent to the volume of 6,000,000,000 standard size brick. In 1953, according to a survey by PIT AND QUARRY magazine, our production output was 1,800,000,000 8-in. equivalent units."

"More than 57 percent of the total volume of concrete block production is used in non-residential buildings, with 11.2 percent going to schools. The use of exposed block in modern schools is common practice today. The acoustical properties make it ideal not only for school usage but hospitals, churches, and other institutions."

"Of prime concern to the concrete block industry has been the drop in volume in the basement market. Today, however, we are firmly convinced that at least in the northern areas the swing is back toward the inclusion of basements in home construction. This is because many of the people who have bought small homes without basements are already crying for more room. When you consider that basement space often doubles the amount of available area of a home, and that the additional cost for the square footage represents only a fraction of the cost of the living area in a home, we have a definite salable proposition. This, I believe, is causing the definite trend back toward the construction of basements in private homes."

Bill Markert on Plans for Expanding Present Markets

An expanded promotional campaign to gain a larger share for the concrete masonry industry of the $34,000,000,000 construction market in 1954 was outlined at the Washington convention. Delegates attending the three-day meeting heard how public relations and publicity, advertising and sales promotional tools would be used at national and local levels to consolidate the tremendous gains of the industry during the last decade.

Pointing out that government and private forecasts estimate "the construction industry will experience its second-highest volume year in '54—off only about 2 percent from 1953's record high," William P. Markert, director of promotion for N.C.M.A., said:

"This promotional program is only the beginning; although it's the most ambitious program the association has ever undertaken, it should still be regarded merely as a first step."

Highlight of the promotional presentation was a playlet, using live actors, slide films, and sound effects, to dramatize the current market picture and the industry's opportunity in the non-residential and residential construction fields.

In response to the dramatized dilemma of a young married couple seeking to build a new home, Mr. Markert provided pertinent replies, such as:

1. A bigger home can be built at less cost using concrete block.
2. Concrete blocks can be used for interior walls.
3. Concrete block can be painted with "all kinds" of colors.
4. Concrete masonry provides built-in insulation values.

Describing the residential market, the playlet revealed that "America will need a minimum of 1,200,000 new homes a year just to keep pace with population growth"; more three- and four-bedroom homes are needed (19 percent of the families who bought houses since the Korean War now want larger homes); only 20,000 of the 2,000,000 Korean veterans have as yet used their home-building privileges; one in four middle-income-bracket city dwellers plans to build or buy a new home in the suburbs; President Eisenhower's proposal for liberalized FHA financing would prove a boon to home building and the industry, and new FHA policies will permit builders to build for the housing market.

The advertising phase of the promotional campaign, Mr. Markert pointed out, will include a heavy schedule of insertions in various media.

● Attending a concrete masonry convention for the first time as representatives of the Empire Tile Machinery & Supply Corp. of Salt Lake City were, left to right: G. Forrest Thompson, Hugh Tuttle, L. R. Collard, and Dr. J. O. Brinton.

● Left to right: R. J. Kennedy Jr., Ken-Block Co., Roy Darden, Roy Darden Industries; Joe Pitha, Bergen Machine & Tool Co.; H. A. McGee, Jr., Farmers Concrete Products, Inc., and Oscar P'Pool, Sr., P'Pool Concrete Products Co.

Frank Erskine on the Program of the Expanded Shale Institute

"Members of N.C.M.A. use more lightweight aggregate than any other single group in the construction industry. For this reason I welcome the opportunity to give you some idea of the aims and activities of the Expanded Shale Institute.

"Our organization is highly promotional minded. However, we believe that a sound technical foundation is the prerequisite for the long-term pull in the promotion of concrete products. Consequently our objectives are to extend and improve the uses of expanded shale by research and experimentation and to present these data to the architectural and engineering professions, as well as the building industry. In order to publish technical data on a nation-wide basis, we feel it is desirable to determine a common denominator for all the materials involved. Therefore, our first research program is the correlation of the performance of concretes made with the aggregates of the entire membership of the Institute.

"Much technical information is available today on lightweight concrete. Copeland, Woodworth, and Menzel have done a considerable amount of work on concrete masonry. Richart and Jensen's work on structural Haydite design criteria has been the standard guide. Petersen, Kluge, and Watstein have conducted work at the Bureau of Standards with many lightweight aggregates. Professor Washa at Wisconsin, Professor Schoeler at Kansas State, Professor Davis at California, Price and Cordon at the Bureau of Reclamation—we could go on and on naming the work done by these and other authorities. We believe that our Correlation Program will give us the information necessary to apply the results of these and other investigations to all the aggregates of our membership.

"Much of this work was done in the early thirties. We believe that since concrete block manufacturing equipment and aggregate production techniques have been improved since then, it is logical to think that the performance of expanded shale block and structural concrete has improved. Consequently, it will be desirable to reproduce this work on several aggregates, some of which were not in existence when the original research was done. The Expanded Shale Institute makes these types of studies possible. . . .

"Obviously our proposed research programs must cover all fields—fire resistance, structural design criteria, prestress criteria, insulation, foam concrete, mix design, and the like. Research takes time. It will be a fundamental policy of the Institute not to jublish technical data until we are absolutely positive of its correctness".

Ted Leba on the Need for a Concrete Masonry Handbook

"Quite often the question is asked whether there is a publication which contains between its covers all that is to be known about concrete masonry and its application to construction. In other words, architects and engineers are looking for a handbook on the subject. There is a lot of literature published on the subject, but unfortunately it is scattered in many publications. I have assembled many of these in a loose-leaf notebook, and use it as my handbook. Assemble in a single portfolio such pamphlets as the P.C.A. *Handbook*, *Facts About Concrete Masonry*, the *O.C.E. Requirements for Concrete Masonry Construction*, the *Reference Manual on Concrete Masonry*, the *Lintel Design Handbook*, the *A.S.T.M. Specifications*, and the principal building code requirements, and you have a comprehensive compilation of technology about our product.

"Assemble these publications within a single set of covers, and with a sense of continuity, and you have a handbook. A handbook will be a tremendous aid in the promotion of concrete masonry because it will give the designer confidence in the use of the material of construction.

"On completion of a design, he can lean back in his chair and say, 'I know my design is right because I followed an authoritative source—the handbook of the industry.' Without a handbook, you need representatives such as myself in principal regions of the country. I came by this observation while attending a regional meeting of the A.I.A. I could tell by the questions asked of me that architects were seeking knowledge on the proper application of designs in concrete masonry.

"There is no major building products field that does not have a handbook on its products. The Structural Steel Industry has its A.I.S.C. *Handbook;* the P.C.A., design tables; the A.C.I., a handbook; the National Lumber Manufacturers, a handbook; the Steel Joist Institute, a handbook; the American Concrete Pipe Association, two handbooks; and the two handbooks by the Structural Clay Products Institute. Many of these handbooks have returned the cost of publication just in the sale of copies."

George E. Adams on Prefabricated Masonry Wall Panels

Preliminary conclusions of a recent study made in connection with the installation of prefabricated masonry wall panels on a college dormitory project were revealed in a talk by George E. Adams, Ypsilanti, Mich. Mr. Adams revealed that the use of this material saved 5 sq. ft. of floor space per room.

Citing some of the other advantages, he listed the following points: (1) the panels can be manufactured while preliminary foundation work is progressing on the building; (2) installation of the panels can be accomplished in cold or inclement weather with a small crew; (3) building becomes an assembly operation, with resultant savings in cost and construction time; (4) the basic unit is made on a standard block machine; (5) the masonry panel is made up of a multiple of machine-made units, and variations in design can be accomplished without expensive changes in forms and assembly jigs.

WALTER WILLIAMS
Under Secretary of Commerce

One of the top echelon government officials who addressed the Washington meeting was the Honorable Walter Williams, Under Secretary of Commerce, whose subject was the commerce department's program for aiding small business. Mr. Williams said in part:

"The progress made by your industry typifies the basic economic strength and vitality of our nation. Yours is an industry composed predominantly of relatively small plants, for the most part owner-operated and managed, and contributing greatly to community growth in the areas served. It is a relatively new industry with an experience of rapid growth and product improvement. It exemplifies the value of pride of ownership, initiative, and resourcefulness which is so essential to economic progress.

"I was interested to learn that the output of concrete masonry last year amounted to 1,850,000,000 8-in. equivalents. I have been told that this number of blocks, if laid in a continuous line, would stretch around the earth at the equator more than 17 times—the equivalent of a 10-ft. wall 25,000 miles in length.

"I would like to point out that there is a very real analogy between the strengthening of your industry's position through the changes which have been made in it and the strengthening of our nation's economy by the changes that the present Administration has instituted in the relatively short time it has been in office.

"The mix in government-business relations has been changed by the present Administration from the previous proportions and relationships, and has already resulted in a strengthening of the nation's economy. Let us look at the changes in government-business relations which are occurring.

"First, that it be recognized that government is representative of our entire nation, and that the welfare of the business segments of the economy and the welfare of the other segments of economy are interdependent.

"Second, that government-business relationships must be directed toward the same goals.

"Third, that in defining these mutual goals and striving to attain them, both government and business must be motivated by a full consideration of individual rights and the public good.

"Fourth, that there must be an acknowledgment by both government and business that each has certain responsibilities to discharge in the interest of the other.

"Fifth, that there must be an acceptance on the part of both government and business that relationships be flexible, and capable of dealing with the dynamic nature of our economy and the ever-fluctuating impacts of world-wide economic and political factors.

"Sixth, that the fulfillment of all of these aims, and the achievement of a relationship between government and business in form and fact which will provide the greatest possible stimulation to progress require the exercise of the highest level of economic statesmanship on the part of each."

G. YATES COOK

National Association of Home Builders

G. Yates Cook, originator of the famous Baltimore Plan of slum clearance, who is known as that city's "one-man housing division", warned of the apparent tendency of large cities to drift into bankruptcy because of their failure to conserve housing. A few salient quotes from his address follow:

"Because of that failure the biggest single asset in our country's weath, the $220,000,000,000 housing investment, which is more than a quarter of our $830,000,000,000 national assets, is wasting away faster than we are building new homes."

"Because of that failure the whole $570,000,000,000 investment in our cities and the whole economic complex founded on the city concept is threatened. Serious thinkers talk of abandoning our present cities as already beyond salvage. Millions of plain people who never heard this talk and theory are putting it into practice and moving out of town."

Mr. Cook explained that the immediate urban housing problem directly concerns only three groups: the low-income families; families who cannot buy homes and who cannot find rental vacancies; and Negro families, regardless of income and number of children. He declared that the decay of our cities is the No. 1 economic problem of our day, out of which grow the twin problems of public health and crime.

"This middle-class flight across the city line to the suburbs is eating away the tax base of the cities," he pointed out. "Big stores are following their best customers to out-of-town shopping centers. New industry is beginning to follow its labor supply to suburban factory centers. Who will pay the mounting cost of city government if only the poor are left behind in its spreading slums?"

Mr. Cook urged that these three "tools" be used to fight the trend of decentralization: the support and participation of industry; credit improvement for existing housing; and political endorsement at federal, state, and municipal levels.

Canadian Block Association Suggests Standard Names

THE National Concrete Products Association (Canada) has published a list of standard names for various types and sizes of concrete masonry units, and is urging member firms to use the suggested terminology in all references to their products. Producers in the United States will be interested to note how closely most of the suggested nomenclature in the following compilation tallies with common practice in this country.

1. Concrete block or concrete brick is a precast unit of building materials made of cement, sand, and gravel.
2. That the name of the original product be "concrete" block or "concrete" brick, and that block or brick made of other materials (*i.e.*, cinder) be designated by the material (*i.e.*, cinder block, etc.)
3. That the plural form of brick and block be the same as the singular.
4. All smooth-faced block shall be designated as "standard block" and all other types (*i.e.*, rock-face, etc.) shall be so designated.
5. A standard block is a smooth-faced, cored block, 4, 6, 8, 10, or 12 in. in width, complying with the requirements of local building codes.
6. A block without cores, but made entirely of the same type of material, shall be termed a "solid" block.
7. A "semi-solid" block is a solid, partially cored block.
8. A block half the length of a standard block shall be termed a "half" block, and any other fraction thereof shall be designated as the fraction.
9. Block that are plain on one end shall be termed "plain end block".
10. Block made in the form of an "L" shall be termed "L Corner Block".
11. Block plain on both ends shall be termed "pier block".
12. Block with sash space cut out of one end shall be known as "metal sash jamb block".
13. Block, plain one end with a cut-out for a wood jamb, shall be termed "wood jamb block" or "joist block".
14. Block with a cut-out for brick tie-in shall be termed "header block".
15. Block formed with a 45-degree angle shall be termed "45-degree angle block".
16. Block used for lintel purposes shall be termed "lintel block".
17. All other than above specified shall be known as special types and designated by local usage.
18. "Lightweight" is a descriptive name of a group of block made of cement and lightweight aggregate, *i.e.*, slag, Haydite, Celocrete, Rocklite, etc.
19. Block sizes must conform to local requirements and conditions. There is no recommendation for uniformity of sizes at this stage.

● Scene on the batching floor of the Turner Gravel Company's ready-mix plant in San Antonio, Tex., as a group of students and instructors from the short course on concrete (sponsored by the P.C.A. and the Building and Structures Branch of the Fourth Army) visited the facilities. The visitors showed much interest in the sampling and testing procedures used to maintain quality control.

A Part Of Your Income Can Be
Exempt From Income Taxes!

THERE was a time—and not so many years ago—when a man was pretty well up in the world before he had to consider income taxes, and then they were only a minor nuisance. Today, Uncle Sam's

By BETTY LEE GOUGH

Treasury men take from nearly everyone, and it usually hurts. But there are a number of perfectly legitimate ways to render part of what you make exempt from his annual gathering of the dollars. Here are some of them:

Family Partnerships One of the most effective ways to exempt a part of a concrete manufacturer's income from the collectors' hands is offered in the generous provisions of today's tax law on family partnerships. Formerly a business man had to fight hard—frequently in the courts—before the Bureau of Internal Revenue would allow him to consider his business a partnership between himself and his son, daughter, brother, or sister. But things are different now.

(Since the introduction of the split-income setup in 1948 a man has automatically been in partnership with his wife anyway if he chooses to take advantage of its provisions.)

Before 1951 the Bureau of Internal Revenue looked with a jaundiced eye at partnerships in which a father gave his son an interest, or the money to "buy" the interest from him. Bureau spokesmen said it was a tax-cutting device to put income in the lower-bracket hands of the son.

Today it doesn't matter, even if the son is only five years old and a minor under the guidance of the father.

Let's consider an actual case. Jack's profitable plant yielded him a net income of $18,000 yearly. After splitting the income with his wife, he still found Uncle Sam taking a sizable chunk of his part. So Jack changed the business organization from sole ownership to partnership. Now roughly one-third of the net is earned by Jack Jr., a high school teenager.

Jack Sr. is now in a lower tax bracket and reaps a considerable

Exemptions! Happy thought for the harried plant operator.

saving in the percentage the Treasury demands. Jack Jr. has his own personal exemption, and is in a still lower tax bracket.

A family partnership cannot come into being simply by wishing it. Liberal as the law presently is, it still makes certain conditions. Uncle Sam won't recognize interests made by gifts in which capital is not a material factor in producing income. (In any personal service business, for example, the recipient of the partnership would have to participate actively in its operation.)

And Uncle Sam still looks closely at such gifts. They have to be genuine, no strings attached. Jack Jr. became the actual owner *in legal fact* of his interest in Jack Senior's plant. Until the son reaches 21, Jack Sr. will still guide the youth; and for practical purposes it's all in the same kitty. When Junior comes of age, however, he will be able to sell it to a stranger if he wishes. The interest is genuinely his. And Uncle Sam insists the new partner receive no larger share of the profits than would be represented by his percentage ownership interest.

"But shucks," Jack Sr. says, "I *wanted* the boy to come into the business with me when he grows up. This way, I'm doing what I'd have done anyway in making Jack a partner. And I save a lot on taxes."

Savings Where do you sock away your savings? What you do with them can make a great difference in income tax—even render a goodly portion of income completely tax exempt. This consideration is more important to the concrete manufacturer who makes a sizable annual net than it is to one in lower brackets.

The question arose for Bob Smith—which isn't this manufacturer's real name—when he asked his banker to explain something about the different classes of United States Savings Bonds.

"I know some of them pay current interest," Bob said, "and others, like the E Series that most of us know, 'appreciate' annually until maturity. Before I buy, I'd like to know of the different classes of government bonds."

The banker asked a question.

"You're in a pretty good income bracket aren't you? I'm judging from the size and frequency of your personal deposits, and the amount you keep liquid here with us. If you make over $10,000 a year, you should know something about a class of security that's almost in the same class as government bonds for absolute safety and that will give you a yield you don't have to declare on the tax return."

The banker then went on to tell about municipal bonds. "These are the obligations of states, counties, school district, and municipalities," he said. "Experience has shown that they're second only to government bonds for complete safety. Of course, some are better than others, and some pay more than others do. Look at this table, however, to get an idea of what the exemption from federal (and in many states, from state income taxes as well) will mean to you. It shows that for a single person in the $14,000 bracket, a 2¼ percent municipal pays as much as an ordinary investment at 4¾ percent would give after taxes; and you'll find many sound situations at up to 3 percent. Give it some thought, Bob."

Utilities There are other avenues for putting savings to work and paying no tax on the income they bring. In some common stocks, special conditions make *a part* of their return non-reportable. A broker told Bob Smith about one of these.

"Since it is a utility," he explained, "a portion of the dividend, due to increased amortization, is not ordinary income. It is taxed only when the stock is sold, and then at the lower capital gains rate."

Who can tell you where to find "savings situations" like these? Most bankers are in a position to know, and a stock broker, preferably one tied in with a nationwide organization that takes note of happenings in large and small companies, can point to numbers of such situations.

Gains From Losses Sometimes it pays to lose money. Consider the case of Peter Green, another fictitious name that disguises a very real concrete manufacturer. Green owned his business real estate. He had bought it two years before at a peak level, from which prices in his town had since receded. Talking to his accountant one day, he expressed the wish that he had several thousand extra dollars for financing a plant expansion.

"Right here in the figures I'm working you have those thousands and a lot more, plus a sizable tax saving," the accountant replied.

Following the C.P.A.'s suggestion, Green sold the real estate which had cost him $40,000 for a realistic present valuation of $35,000. In the agreement there was a provision for a 25-year lease which guaranteed Green the continued use of the property.

"Now," the accountant told him, "you have achieved a 'loss' of $5,000. You can use it to offset any capital gains you might make this year. Lacking those, you can use $1,000 of it as an offset against regular income. Then you can carry forward the remaining $4,000 and use it for offsetting future capital gains or to count as a loss at the rate of $1,000 per year against regular income for the next four years. And that's not all.

"Formerly, you had to carry the building on a long amortization table that gave you very little deduction each year. On the land you were allowed no depreciation at all. But today you're paying rent. And the rent is 100 percent deductible. Your tax saving there will be no small amount—more than enough to make the whole deal profitable even without the other advantage."

Deductions Often concrete manufacturers tend to ignore the possibilities of deductions that cannot be taken as business expenses. In a great many cases, it's both simpler and more profitable to use the blanket deduction rather than itemize personal expenses.

"However," one leading tax attorney has pointed out, "there are angles most taxpayers miss. If an individual makes a pledge of his charitable contributions in one year and pays them in the next year, he will be better off by taking the blanket deduction the year of the pledge, and the second year he will benefit by paying the pledge for the second year in the same year he paid his pledge for the first year. In effect, he would take the blanket deduction every other year, and the actual cash spent in alternate years."

Another way to use personal expenses as a lever for exempting part of your income from taxation is through full use of the medical and dental expense item. It's true that Uncle Sam allows these to be deducted only if they're greater than 5 percent of the adjusted gross income. In many cases they would be, if only the taxpayer knew how many items count as medical expenses.

Keeping track of every aspirin or other routine self-medication purchase can add up a sizable amount of medical deduction in the average family of five.

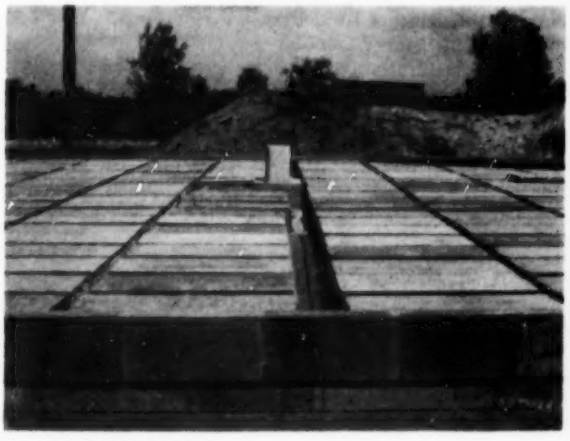
In addition to these (plus the cost of crutches, eyeglasses, dentures, nursing care, etc.), there are unusual types of expense fully deductible under the medical heading. For example, a manufacturer whom I'll call Bill Brown took a trip to see Eastern specialists for treatment of a chronic ailment. His home town physician had advised the trip.

Brown knew he could deduct the sizable fee paid to the specialists. He was surprised to learn that in addition, the expense of *travel* to obtain the needed care could be taken off on Form 1040. Moreover, board and lodging expense of staying in a rest home which the specialist recommended was also a legitimate medical cost in the eyes of the Treasury's tax men.

The choice of one vacation spot over another can sometimes make vacation expenses partly deductible and thus render a worthwhile lump of profit exempt from taxes. Fred Snow (that's not this manufacturer's real name, either) had lunch one day last year with an attorney when the subject got around to vacations.

"You say you're considering either the North Carolina mountains or New York City," the lawyer said. "Here's a thought. Don't you deal with firms in New York, and isn't it possible that you'd do yourself some real business good by calling at their offices? I'd advise you to take your vacation in New York, and you'll find that you can save a lot at the same time you're helping yourself business-wise."

If a trip is partly for business purposes, the attorney continued, then its expenses may be charged against business profits. "Thus," he concluded, "You'd be able to take your vacation; and instead of only pouring out money, you'd be able to reduce your tax bill, too. But—*this is important*—you can't fake anything. You really have to make those calls and carry on the business activities you claim to do. Then figure the percentage of the time you were 'working' and deduct that percentage of your own expenses as a business trip. Include hotel, meals, even tips."



● Main floor of the self-built home of Charles L. Faulkender, Utica, Mich., a concrete block plant operator, who has developed his own floor block. This view shows the units, laid 2 in. apart, ready for the 3/8-in. rod to be placed in the joist apertures in both directions. Note the wider placement on the shoring to allow for extra strength and reinforcement in the integrally-cast beam.

N. C. P. A. (Canada) Convention Draws 250
John Pennachetti Elected President

JOHN PENNACHETTI, president of the Thorold Concrete Block Co. Ltd., Thorold, Ont., is the new president of the National Concrete Products Association of Canada. He was elected to head the group at its fifth annual convention, held January 25 and 26 at the Sheraton-Brock Hotel, Niagara Falls, Ont.

More than 250 delegates attended the convention, which included a display by 13 manufacturers of block-making machinery, coloring materials, and other devices directly connected with the concrete products industry.

Keynote of the convention was the need for increased promotion of concrete products by Canadian block manufacturers. The association took steps to embark on a public relations program through voluntary pledges by members and supporters, and it is expected to be a continuous and growing program.

The members heard from two Americans the steps being taken to promote concrete masonry in the United States. Fred Reinhold, Anchor Concrete Products, Inc., Buffalo, warned that 1954 is expected to be the "year of the big sell," with a return to buyer's market conditions; and C. A. Sirrine, secretary of the Michigan Concrete Masonry Association, gave his audience specific instances of promotion steps and their results.

A tour through the Ontario Hydro Electric Power Department at Niagara Falls followed an address by Dr. W. P. Dobson of Hydro outlining the development.

Other speakers included architect Robert D. Schoales of the Royal Architectural Institute of Canada; representatives of three cement producing companies; the president of the National Home Builders Association, Gordon Shipp; and Toronto newspaper columnist Wessely Hicks, a humorist of the first order.

There was a separate program for ladies attending the convention, including a trip through the Niagara Falls plant of the Canadian Shredded Wheat Company Limited, a sightseeing trip, and a tour of the Falls area.

With Mr. Pennachetti on the executive board are Garnet Fraser, Windsor, past president; W. H. Kirkpatrick, Woodstock, first vice-president; Brant Coleman, Aldershot, second vice-president; Carson Luke, Paris, Ont., secretary; and Lou Scholes, Gormley, treasurer.

●

President Garnet Fraser, in reviewing his year as president, stated that the association's publication, *National Concrete Products News*, had completed its first year of publication. He mentioned that N. C. P.A. had made available copies of standard names for concrete block, to help standardize for architects, contractors, and builders the nomenclature for concrete products throughout Canada. He urged members to obtain this list and use the suggested names when referring to their products.

According to Mr. Fraser, officers of N.C.P.A. have demonstrated their interest in the association by paying their own traveling expenses to and from meetings.

●

Fred Reinhold, Anchor Concrete Products, Inc., speaking on "Modern Merchandising," believes that the year ahead represents a "salesman's opportunity", rather than a "buyer's market". A few salient statements follow:

"Market research gives us facts—the merchandiser must use them intelligently."

"Concrete products manufacturers must develop new uses for their products. You don't need new equipment, but you must find new and inventive uses for the equipment you have."

"A new type of farmer, the 'sundown farmer", who has developed with changing patterns of leisure time for city workers, is a good prospect for such items as garden patio blocks."

"My company has spent $25,000 a year for the last seven years for promotion."

"It has been a seller's market for the last ten years, with customers pleading for our products. The rules are different now for all manufacturers, not only for concrete products manufacturers. 1954 is the 'year of the big sell'."

●

H. C. Druce, North Star Cement Company Limited, in discussing the cement supply situation for 1954, said, "My company expects to have a production of 600,000 bbl. in 1954. Of this, an estimated 270,000 bbl. will be for Newfoundland."

"We feel that we can compete favorably with U. S. and European cement in terms of both service and price," he declared.

"North Star will sell cement in the Great Lakes area this year only if other producers are unable to supply the demand, and a shortage develops. We can supply seven boatloads per month in 1954, or 15,000 to 20,000 bags, 60,000 bbl. per month. We learned by experience the shipping, handling, and stevedoring problems involved in shipping from Newfoundland."

●

J. R. O. Counsell, St. Mary's Cement Company Limited, who discussed the same topic, reported that, a new kiln went into operation at his plant last June, increasing production by about one-third. He stated that his firm is now putting cement into stock for the first time in seven or eight years.

"The concrete products industry is on the preferred list," said Mr. Counsell. "The industry is going ahead, and gets full consideration from cement producers."

●

C. A. Sirrine, secretary, Michigan Concrete Masonry Association, presented his views on promotion in the concrete masonry industry. He believes that any inability or failure to utilize fully the many sound adaptations of concrete masonry to the building industry is due mainly to an inadequate understanding of the industry's products as acceptable building materials.

"This dearth of informed know-how is by no means confined to any one group who are logically interested in this matter by the nature of their activities," he pointed out. "Not only has the designer and the builder been handicapped to a considerable extent with respect to proper information and clear understanding, but many manufacturers as well have been unfortunately oblivious to the problems encountered by the designer and builder in making full and intelligent use of concrete masonry."

"The obvious answer is continually more and better information, channelled directly to architects, engineers, builders, and all others who

(Continued on page 234)

VETERAN BUILDING BLOCK COMPANY—
Versatile Concrete Manufacturer

SEVEN years ago the Veteran Building Block Company, Winston-Salem, N. C., gained national recognition in *Look Magazine*. The company was portrayed in a feature article dealing with a cross-section of business enterprises developed by ex-G.I.'s after the war. Today the company is still a going concern, having gradually expanded and diversified its operations until now it embraces three separate plants (block, concrete specialties, and ready-mix concrete)—all located in Winston-Salem.

The main plant, served by the Norfolk & Western Railway, produces a variety of concrete masonry units, as well as septic tanks and 4-in. drain tile. The block are produced on a three-block Besser Vibrapac machine, which is equipped with an M & M Electro-visor quality-speed control unit; production averages 900 block per hour. Cinders and expanded clay are used exclusively; and these aggregates, along with cement, are stored in a Butler 200-cu. yd., four-compartment bin.

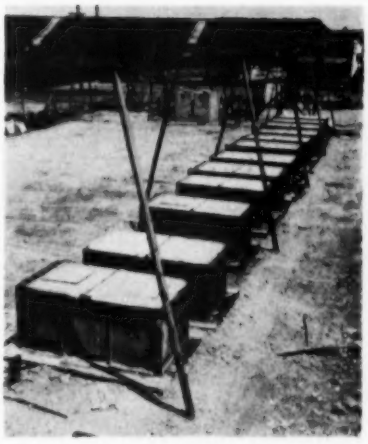
Curing is accomplished in a battery of six steam kilns having a total capacity of about 10,000 block; a Clayton 100-hp. oil-fired steam generator supplies the steam. The steam unit is generally operated until the kiln temperature reaches 180 deg. F. (about 2 to 3 hours), after which the block are allowed to soak over night. Three Clark lift trucks transport the block in and out of the kilns.

The masonry units are cubed by hand; pallets are used to a certain extent. Block deliveries are handled by a fleet of six flat-bed trucks, one of which is a G.M.C. 620 equipped with a Bros Lectro-Lift material-handling truck body. The latter unit has a 6,000-lb.-capacity, electrically-operated lifting mechanism, and it readily accommodates eight cubes to a load.

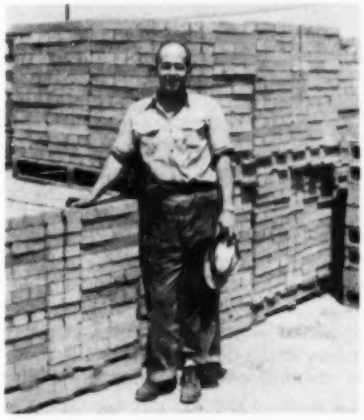
Septic tanks are produced with Carpenter septic tank forms and handling equipment. Generally, four 800-gal. and two 500-gal. units are poured every other day, using ready-mixed concrete. The alternate days are set aside for yard curing. Tank deliveries are made by a flat-bed truck equipped with a monorail, a chain hoist, and a special Carpenter gripper. The general practice is to set the tanks on the job, but not to install them.

On alternate days the septic tank crew works at drain tile production. The tile are produced with a Dunn

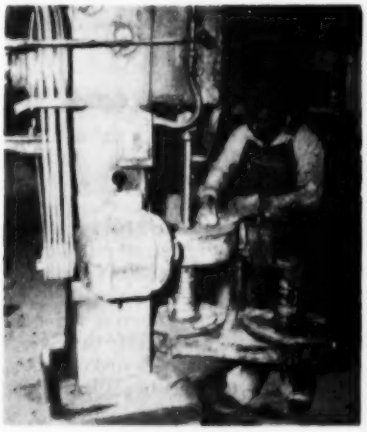
(*Continued on page* 234)



● View of the concrete septic tanks undergoing yard curing. Four 800-gal. and two 500-gal. tanks are poured in a day.

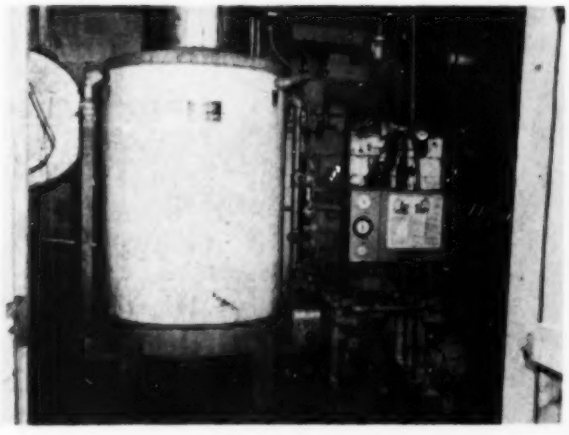


● W. C. Chambers, production manager, beside a pile of Roman-rough colored units.



● View of the 4-in. drain tile machine; units are steam-cured in four small kilns.

● Block are cured in a battery of six kilns; steam is supplied by the 100-hp. oil-fired steam generator shown here.



● One of the delivery trucks is equipped with a 6,000-lb.-capacity material-handling body, which handles palletized cubes.

Warner Company Builds Wash Pit For Ready-Mix Trucks to Comply With Stream Pollution Laws

The Warner Company operates a network of central mixing plants which serve the Philadelphia area. To comply with the state's comprehensive program of stream pollution control, the company recently constructed a concrete pit to be used for washing out its trucks at the end of the day. This article, prepared for The Concrete Manufacturer by the company's engineering department, tells how the wash pit is operated and what results are being obtained.

—The Editors

● Warner Company trucks taking on salvaged water from the pit, which is stored in the structure at the right. After taking on water to about one-third the capacity of their drums, the drivers run the trucks to the washing pit to clean them both inside and outside.

A NEW system for handling the wash water from central-mix-concrete trucks was recently built at the Berks Street yard of the Warner Company. This yard is situated on the bank of the Delaware River in Philadelphia.

Prior to the building of the facilities wash water from these trucks was discharged directly into the Delaware River. While the ingredients in central-mix-concrete are not harmful and do not pollute the river, the Sanitary Water Board of the Department of Health ruled that the discharge had to be cleared up in line with the state program for purifying the Delaware River.

A description of the new system follows, the order of presentation closely following the operational sequence.

On receipt of orders to wash out, the driver takes on water, to about one-third the capacity of the mixer, at one of four filling stations. (This water is salvaged from the pit, as explained later.) The truck is then driven to the dump pit with the barrel turning over at relatively high speed, (about 8 to 10 r.p.m.) and backed into one of 19 stalls.

At this point the exterior of the truck is hosed down with Philadelphia city water. The run-off drains into the pit. This operation consumes from 10 to 20 minutes. During this period the barrel is revolving at a slower rate, about 5 r.p.m. The rinse water is drawn from the city mains and stored in a 20,000-gal. tank, kept full by a float-operated valve. There is sufficient gravity head to permit simultaneous washing of 3 or 4 trucks. To maintain satisfactory pressure a booster pump is used when several trucks are being serviced at one time.

The driver next discharges the contents of the barrel into the pit. After a final rinse of the chute and gate assembly he drives to the garage.

Measuring approximately 108 by 24 by 7 ft., the pit holds (when clean) enough wash water for the fleet of 50 trucks. The solids settle out during the night. A timer starts one of two submerged centrifugal pumps at 7:00 a.m. to empty the pit. These pumps, rated at 180 g.p.m. each, are used alternately by the week, and are located in a

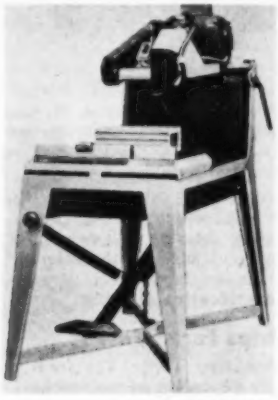
(*Continued on page* 233)

● The concrete truck washing pit at Warner Company's Berks Street yard in Philadelphia will accommodate 19 vehicles simultaneously. In the picture may be seen the hose connections for washing the exterior of the trucks, and at the right the crane used for digging solids from the pit once a week. The pit holds a week's discharge of solids and a day's discharge of water. When settled and clarified, the water is pumped to tanks (housed in the tall concrete-and-brick structure at the left) for re-use in filling the truck bodies for interior cleaning. Pumps at the pit lower the water level to make room for the next day's washing. In the background (left) two trucks are seen taking on water in preparation for washing out the drums.

New Machinery and Supplies

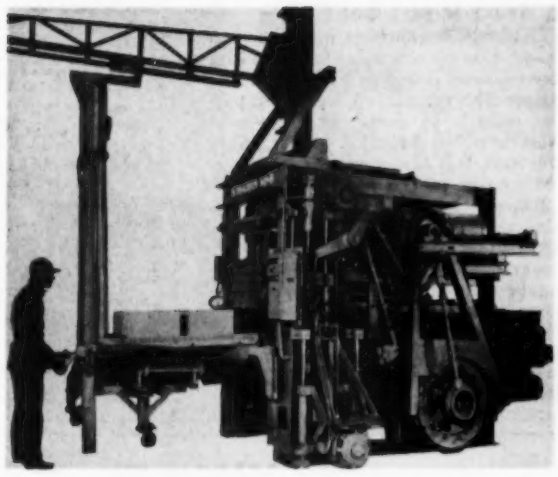
• Masonry Saw

Streamlined design and lightweight construction feature the Valor II masonry saw just announced by *Victor Engr. Corp.* The Feedmatic principle has been



retained to assure correct blade pressures. Instant height positions are provided by a front-end adjustment, while a turnbuckle setup on the back bar allows infinite variations of head positions. Aluminum alloy casting, angle iron and pressed steel have been combined for lightness and strength. Wet and dry cut models are available.

Our Identification No. 101



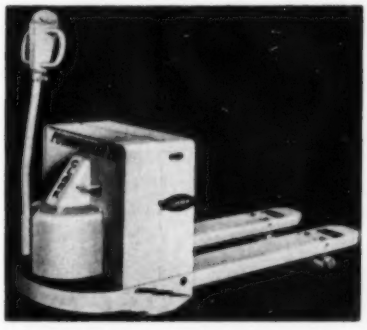
• Three 8-in. equivalents per cycle are produced on this new Stearns block machine. Sold as a complete package, Model 50-3 is fully-automatic for one-man operation. It uses 18½x26-in. plain steel pallets, and is completely cam and crank operated.

Our Identification No. 102

• Powered Hand Trucks

Short overall length (only 26 in. longer than the load), maximum load stability, and several safety features are built into a new line of powered hand trucks by *Clark Equipment Co.* Low lift pallets and platforms in 4,000 and 6,000-lb. capacities, telescopic tilting fork trucks in four base capacities 1500 to 3000 lb., and a walk-it or ride tractor designed for either slow or high speeds comprise the line.

Load stability is provided by underslinging the battery for a low center of gravity and by using a drive wheel 10½ in. in diameter and 6 in. wide. This is driven by a high torque, series-wound motor geared directly to the drive wheel axle through a double reduction of spur gears. A brake operated on the motor



shaft and a handle that automatically returns to vertical are among the safety features of this Powrworker 26.

Our Identification No. 103

• Heavy Wheel Block

Heavy trucks can now be blocked with safety even on the poorest surfaces, *Calumet Steel Castings* says, introducing the Safety Wheel Block. This one-piece alloy steel casting, standing 14 in. high on a 15- by 10-in. tip-proof base, has gripper teeth that bite into the ground to stop creeping even on ice or slippery pavements. A wide curved plate accom-

modates large and small tires equally well. Tow trucks use the Block as anchorage during winching, Calumet reports. A handle is cast into the support rib. The 30-lb. unit is painted yellow for visibility.

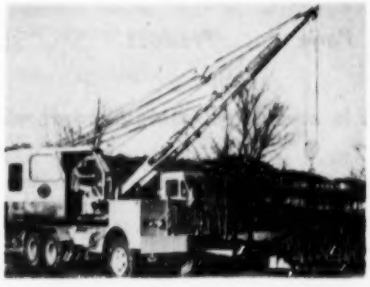
Our Identification No. 105

• A patented drum drive with planetary reversing transmission is an exclusive feature of the new Le Roi Transo mixers. The line includes seven sizes, from 3 to 6½-yd. capacities. Lightness, compactness and ease of handling are some of the results produced by the exclusive drum drive, according to Le Roi. The drum reverses easily with full load.

Our Identification No. 104

• Fast 15-ton Crane

A truck crane version of its recently improved 205 excavator has been unveiled by *Koehring Co.* It lifts 15 tons and



travels 32.6-m.p.h., with 10 forward speeds and two reverse. Eight-foot long outriggers give extra support in stationary lifting. Safety boom limit stops and power lowering are standard features. The cab has been redesigned, and operating levers are rearranged for easier handling. Power air brakes are built into each of the four rear-drive wheels.

Our Identification No. 106

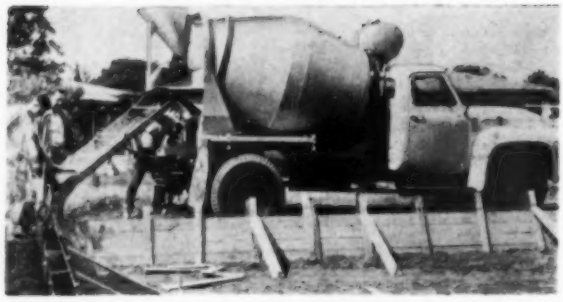
● Truck-Mixers Get PTO

Challenge truck-mixers in the 3- and 3½-yd. sizes are now being furnished with power-take-off instead of a separate mixer engine. This permits full, legal-rated payload capacity on shorter wheelbase with either standard or COE trucks, *Cook Bros.* says. It is advantageous to operators maneuvering in cramped quarters.

Power is taken from the truck transmission, with a high and low gear to permit a wide range of operating and discharge speeds. Charging and discharging can be controlled from the rear of the mixer or from the driver's position.

Complete Challenge mixers with PTO are furnished ready to install on any new or used truck.

Our Identification No. 107



● Bigger payloads on shorter wheelbases, and greater maneuverability at the jobsite result from using a power take-off in place of the usual mixer engine on this Challenge unit, Cook Bros. says.

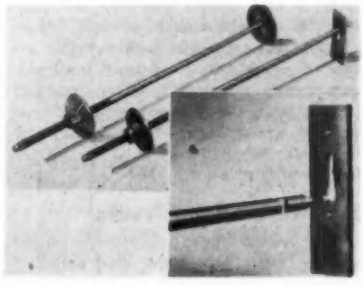
● Anti-Water Coatings

Two water repellent coatings are now being offered concrete firms by *Armor Laboratories* for their own use or for retailing to their customers. One of them, Armor Coat for porous masonry construction above or below grade, is applied like paint and serves as both protection and beautification. It was used in England for wartime concrete structures and is used extensively in the Far East where rainfall is 100 to 300 inches a year. The other Armor product is Silinite, a clear silicone-base water-proofing agent for above-grade masonry that penetrates masonry without affecting the color or texture of the surface.

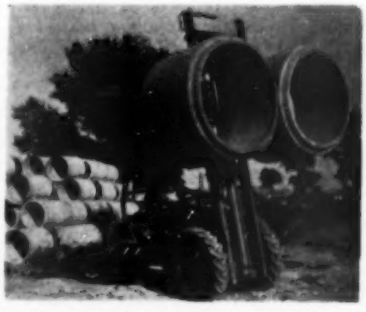
Our Identification No. 108

● Strips Forms Fast

A new type Taper Tye form clamp featuring a keyplate on one end instead of the usual thread and washer has been introduced by *H. J. Krueper* to speed the stripping of concrete forms. It is adjustable for 6- to 13-in. concrete, but can be furnished in rods up to 61 in. long on special order. They can be bought or rented.



Our Identification No. 109



● Combining the tractive ability of the industrial tractor and the lifting and stacking nature of the fork truck, Tracto-Lift offers this Power King in six sizes for rugged all-weather duty, even in poorest terrain. Speeds to 12½ mph, and lifting capacities to 15,000 lb. A scoop bucket is among the many attachments.

Our Identification No. 110

MARCH 1954

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132								

Please send more information on products shown in the Advertisement on:

Page _____ Product _____ Adv. _____

Page _____ Product _____ Adv. _____

In addition I would like information on:

_____

_____

Name _____ Title _____

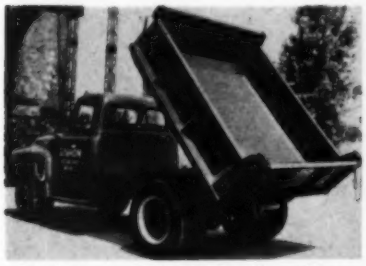
Company _____

Address _____

City _____ Zone _____ State _____

● Lighter Dump Body

Weight savings up to 25 percent feature dump bodies now being built by *Galion Allsteel*. High tensile steel is being used to achieve this and to add several

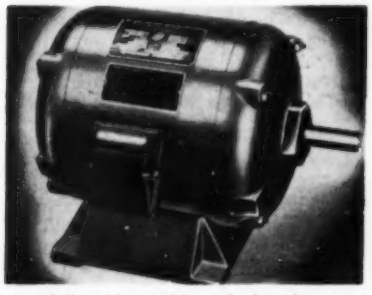


other features to the Galion line. Shown is the first unit built with the special steel, a model 12-3 contracor's body, 8 ft. long, 78 in. wide inside, and 90 in. wide overall. Its floor, submerged-arc automatic seam welded, has no weld obstructions, and has a minimum yield point of 50,000 p.s.i., nearly double that of hot-rolled carbon steel. Cab protector, sideboards, center partitions, offset or flush hardware, and other accessories are available.

Our Identification No. 111

● Electric Motor Line

A smooth, economical changeover to the new NEMA electric motor standards is promised producers by *A. O. Smith*, offering a new line of integral horsepower units that will be available in either the present or the new NEMA mountings. This will permit the customer to avoid



remodeling his machines during the transition period, and allows him to liquidate inventories of belts, pulleys, and accessories without loss. Initial production is on the 1-, 1½-, and 2-hp. motors with 203, 182, 204, and 184 frames.

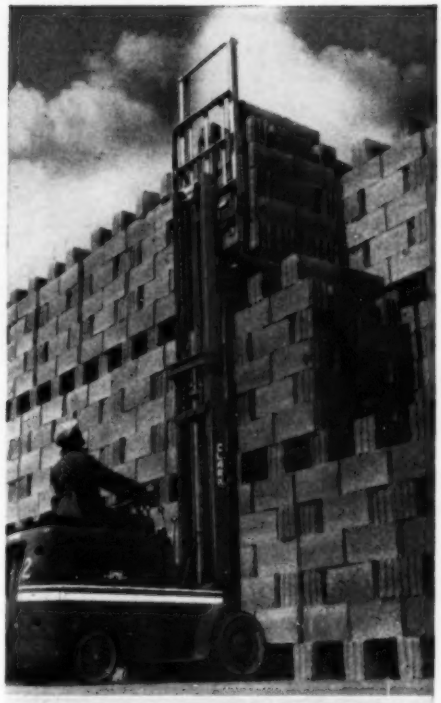
Our Identification No. 112

● Trucks Get Hydra-Matic

Your driver need no longer "row himself up the hill" with gear shifting and double-clutching, *General Motors* says. The 1954 GMC truck line features Hydra-Matic drive in medium and heavy-duty trucks up to 4½ tons, which handle gross weights of 45,000 lb.

More than 100 other engineering and design changes feature the '54 line including power steering, silent power muffler, five new heavy-duty models with a 72-in. bumper-to-back-of-cab dimension, and a 125-hp. 6-cylinder engine in the lightest GMC's.

Our Identification No. 113



NO CAPITAL INVESTMENT for your material handling costs when you use CLARK'S PAY-AS-YOU-GO LEASE PLAN

Without tying up a penny of working capital, put Clark material handling equipment to work for you. With Clark's pay-as-you-go plan, any of Clark's many models and types of handling equipment is available for your immediate use. With no down payment and at a low monthly cost, this lease plan enables you to:

1 Conserve working capital for other essential needs—such as additional inventory, plant expansion and non-leasable capital equipment.

2 Pay-as-you-go rental is totally deductible expense.

3 Eliminate trade-in problems and get the benefit of newest equipment.

No outside financing is necessary—you deal directly with your local Clark dealer who will help you determine what equipment best fits your needs. Gas or electric fork trucks, Powrworker hand trucks, tractors and Clark-Ross carriers—all are available on a 3 or 5 year lease.

Let Clark equipment pay for itself as it cuts your handling costs. Call your local Clark dealer for a discussion of the details which will not obligate you in any way.

CLARK EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 90, Michigan

SEE THE YELLOW PAGES OF YOUR PHONE BOOK FOR THE NAME OF YOUR LOCAL CLARK DEALER

The case of the hesitant sand...

Yes, a New England foundry really did have a case like this. As the sand started down through the overhead bins and hoppers, it paused uncertainly, sort of reared back and held up production something terrible.

Fortunately, the foundry superintendent called us for advice. In short order a battery of CLEVELAND vibrators were installed on the bins, and the sand hasn't hesitated ever since.

Whatever your hesitant material . . . cement, steel chips, ore . . . just tell us — or ask for our detailed literature.

AIR *and* ELECTRIC

2710 Clinton Avenue • Cleveland 13, Ohio

● Several economies in ready-mix concrete production are said to result with this "Travel Batcher" just announced. It is said to do away with over-mixed loads and hot concrete and to save "as much as two dollars a yard" on RMC delivery costs.

Lightweight and easily moved, Travel Batcher can serve several jobs in a day, and has great potential for semi-permanent plant set-ups, its backers claim. Built-in scales weigh each batch.

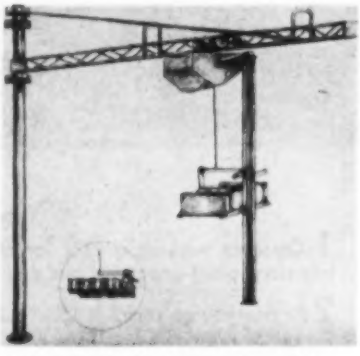
One adaptation is to set-up the Travel Batcher at the jobsite to transfer batches from dump trucks to ready-mix trucks. Dump bodies are divided to carry two batches from the RMC plant to the job, travelling faster than a mixer truck does with one batch. Fewer mixer trucks are needed, as a result, since they remain at the jobsite.

Another system is to stockpile materials at the job and batch directly into the Travel Batcher by front-end loader, or in cases where the total output is considerable, by bins set up around the Travel Batcher.

Our Identification No. 114

● Electric Off-Bearer

A vari-speed drive that responds instantly to the operator's control handle features a new electric off-bearer being built by *Praschak Machine Co.* The



single control handle regulates the up and down motion as well as the vari-speed operations, changing speed or direction at the flick or a wrist. The lightweight swinging boom is mounted to the mast with ball bearing units, while the lifting mechanism carriage runs on ball bearing wheels. Four models are available: with fork or basket receiver, in two and four block capacities.

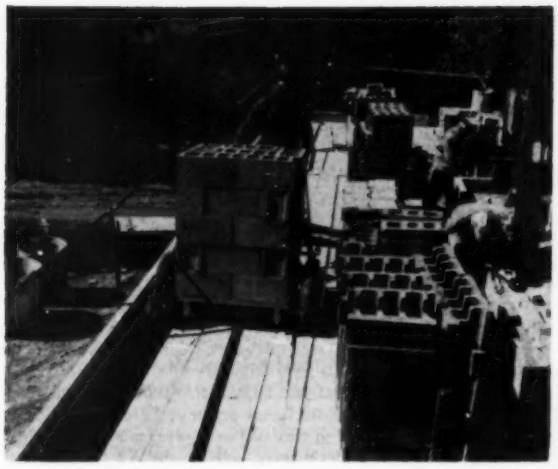
Our Identification No. 115

● Unusual Crane

Combining features of crawler, truck, and erection cranes with those of industrial shop cranes, an unusual materials-handling tool has been developed by *Austin-Western* for indoor and outdoor use. It has a telescopic hydraulic boom that rotates in a full circle, reaches 24 ft. horizontally, and lifts 24 ft. A self-propelled tractor carries the crane, negotiating 20 percent grades and travelling 15 m.p.h. under full load. With boom lowered, the unit stands 9 ft. high. A complete line of attachments, including clamshells, fork lifts, loading buckets, and dozers make this a highly versatile machine. (Below).

● Handy for handling several concrete products, this yard crane has a telescopic boom that rotates in a full circle, reaches 24 feet and lifts 24 feet high.

Our Identification No. 116



● This "buggy" carries palletized or other 1000-lb. loads on scaffolds and hoists, making it easy to move concrete block and other building materials. (See Below).

● Handy Job-Site Buggy

Capable of carrying 1000-lb. loads on scaffolding and materials hoists, a highly-maneuverable hand buggy is finding great popularity among builders for moving concrete block and other masonry materials around the working area. It is built by the *West Brick Buggy Corp.*

Distributing its load over three pneumatic-tired wheels, to cause the operator no strain, the Buggy goes everywhere on the job. A hydraulic lift raises the load 10 in. for travel. A special high-lift unit can be used to place loads on scaffolds at a height of 5 ft. A hand brake controls the Buggy.

Our Identification No. 117

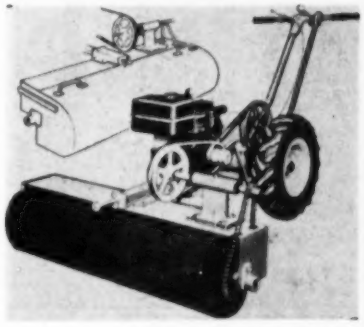
● Helps Lube System

An air-operated automatic "pressure charger" for use with high pressure lubrication systems has been developed by *Alemite* to overcome problems resulting from long pipe lines, low temperatures or "tough" lubricants. Installed near the delivery hose, it provides 6,000 lbs. of lubricant pressure at the control valve when used with 125 lb. of air pressure.

Our Identification No. 118

● Motorized Sweeper

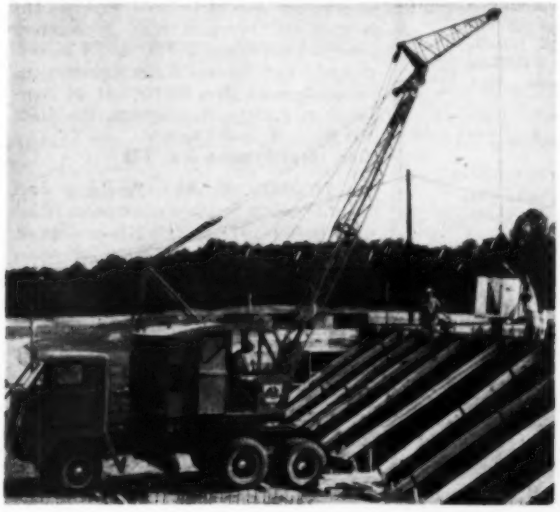
Cleanliness is not only next to godliness, but it is downright good business. Dust is bad for your employees, bad for your machinery, bad for your product



and awfully poor public relations with the neighbors!

One answer may be the recently introduced *Eshelman* power sweeper, said to be the first completely motorized unit of its kind. The 36-in. brush, 10-in. in diameter, sweeps into a 100-lb. capacity metal hopper.

Our Identification No. 119



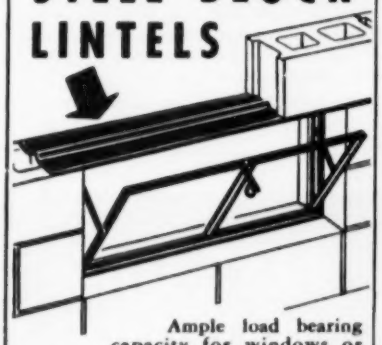
● This specially-designed carrier has been introduced to carry the Schield Bantam shovel crane (a ⅜-yd., 5-6-ton rig). It has a 12-in. I-beam frame, and rear axles rated for 26,000 lb. Highly maneuverable, it has a 16½-ft. turning radius and a roomy one-man cab. A differential lock-out feature is said to assure positive drive from both axles under any ground condition. The upper machinery can be mounted 6 or 24-in. ahead of the bogie center when using various attachments.

Our Identification No. 120

For better, stronger window installations

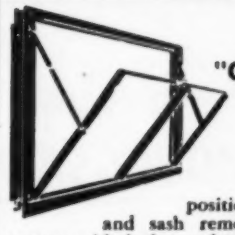
VENTO

STEEL BLOCK LINTELS



Ample load bearing capacity for windows or doors. Available from 2-ft. 6-in. to 5-ft. Formed from 10 gauge hot rolled steel with stiffening crimp in center. Beveled edge provides masonry bond and seat for mortar. Saves costs through use with standard 8-inch blocks. Vento pressed steel angle lintels for brick construction also available.

VENTO STEEL BASEMENT WINDOWS



VENTO "CHAMPION"

Three sizes. Effortless operation gives three position ventilation and sash removal. Double contact with leak-proof water-shed sill stops wind and rain. 14 gauge electric welded frame. Fins welded to jambs for easy installation in block or poured walls.

VENTO "THRIFTY"

A real economy window for lower cost housing. Three sizes, sturdy construction, smooth operation, two position ventilation and easy sash removal. Fin flanges at jambs for quick installations.

***Also** casement, utility and barn windows. Write for full information.*

VENTO STEEL PRODUCTS CO., INC.
254 COLORADO AVE. BUFFALO 15, N.Y.

Trade Literature

COMPRESSION TESTER. Concrete block, pipe, beams, and other units can be tested on a new *Baldwin-Lima-Hamilton* 50,000 lb. unit described in this bulletin. It traces the evolution of the machine and ASTM test method C-109-52.
Our Identification No. 121

ON THE JOB, the *West System* of handling materials incorporates five basic types of equipment—block buggy, pallets, mortar buggy, tractor and fork lift, and scaffolding—to cut masonry construction costs 25 percent, this bulletin says.
Our Identification No. 122

SWIMMING POOLS. All the accessories that accompany swimming pool construction are shown in this *Modern Swimming Pool* catalog—chemicals, paints, diving boards, ladders, filtration supplies, cleaning equipment, etc. "It ain't a home without a pool!"
Our Identification No. 123

LET THIS NATIONAL CAR SHAKER DO YOUR WORK

PATENTED

a Money-Making MONEY-SAVING Machine

3 TYPES OF INSTALLATION

Jib Crane

Mono Rail

Wheel Cars

The National Car Shaker will save you money while it does your work, because it is specially designed to unload hopper bottom cars.

With the National Car Shaker, one man can, under normal conditions, complete the entire unloading operation without going into the car. Stone, sand, gravel, coal, coke, cinders, aggregates and other bulk materials can be safely unloaded in a matter of minutes. Men are freed for more important work.

Can You Afford To Be Without A National Car Shaker?

Can you afford to be without a machine that costs less than comparable equipment—that pays for itself because it can save up to 80% of unloading costs—a machine that saves labor—wages—time?

HUNDREDS IN USE. The National Car Shaker is a *proven* money-maker.

Write Today for free information on how the National Car Shaker can do money-saving work for you.

National Conveyor & Supply Company

348 N. HARDING AVENUE CHICAGO 24, ILLINOIS

THIS HELPS US ALL. A handsome 32-page brochure has been issued by *Stearns Mfg. Co.* as a reference guide for architects and builders in the selection and use of concrete masonry units. It emphasizes the minimum number of types required for the construction of modern designs, pointing out that in addition to its many other attractive qualities, concrete masonry is one of the easiest materials to use for all building construction.
Our Identification No. 124

SHOP HINTS and other items of interest to block producers fill a little publication issued at intervals by the *M&M Engineering Corp.*
Our Identification No. 125

CURING COMPOUNDS. Sprayed on, *Permite* forms an impervious film to seal the mixing water for proper curing, this bulletin says, giving the 12 advantages claimed for the product, which meets or exceeds the specifications of Federal and local agencies.
Our Identification No. 126

MORTAR PLANE. Here's something you can give away, or sell, to every block customer. The *Kakest* Plane spreads mortar faster than by hand and with considerable saving in labor and material, feeding out the desired amount ribbon-like along the row of block.
Our Identification No. 127

HOISTING EQUIPMENT. Derricks, hoists, winches, and related equipment for shop, yard, truck, and construction site are shown in this 16-page *Sasgen Derrick* catalog of hand and powered items. Blocks, sheaves, and winches for stone-setters and bricklayers appear also.
Our Identification No. 128

EXPANDED SHALE. Light in weight, strong and low in cost are features of *Lelite* block, made from expanded shale aggregate that weighs half as much as rock or gravel. This 12-page brochure describes Lelite production, gives mixing specifications, and shows representative installations.
Our Identification No. 129

NEW YORK FLY ASH. High in silica and alumina, a 20 percent replacement of portland cement by New York fly ash reduces the hydrated lime in concrete after 210 days from 110 lb. to 3.4 lb. per cu. yd. and increases the cementitious materials more than 12 percent, as compared to straight PC concrete, this *Minmix Products* leaflet says.
Our Identification No. 130

SECTIONAL SLABS. Precision cast Haydite block are fabricated into 16-in. wide beams and assembled into slabs of specified dimensions for floors or roofs, ready for installation, by the *Rapidex* system described in this booklet. Core holes in the block carry reinforcing rods and permit "pre-arching" of the slabs.
Our Identification No. 131

OPERATION AND MAINTENANCE information on external vibrators in concrete pipe manufacture, based on notes presented at the ACPA annual short course are reprinted in this leaflet by *Viber Co.*
Our Identification No. 132

● In this staff photograph, taken during last month's meeting of the National Concrete Masonry Association in Washington, D. C., Morris Lapidus, Inland Building Block Corp., is pointing out a detail of his cavity wall block to George Kogel of The Concrete Corp., whose company will manufacture the unit. According to Mr. Lapidus, the unit makes it possible to build a cavity wall at less than the cost of the cheapest wood frame construction.

Wash Pit—

(*From page 226*)

screened-off forebay. Both pumps can be operated simultaneously in case of emergency.

The pit pump will operate until the water is lowered to a predetermined point, where it is cut off by a float-operated switch. This level, established by trial and error, is so set that the truck always discharges into water, and no dry material is permitted to show above the surface.

Since the timer is set so that the circuits are cut off at 12 noon, when a large number of trucks begin to fill the pit with water (usually after 12), the pump cannot start. There is a preset distance between the stop and start point on the float valve, so that a few trucks washing out before 12 noon will not start the pump. It is important that the pump should not start until after the overnight settling. The timer is adjustable, and the hours of operation can be changed to suit varying conditions.

Two storage tanks (in series) have a capacity of 20,000 gallons each or a total of 40,000 gallons, which is adequate for the day's accumulation of water. They are vertical cylinders with conical bottoms. Any sediment collecting in the tanks is flushed out daily. Each tank has a valve at the bottom which discharges into an open funnel (for visibility) and the discharge is returned to the pit. The return line has cleanout connections at frequent intervals in the event of stoppage.

Stored water is the source of the barrel charge referred to earlier. Excess is carried over a safety overflow which discharges to the river. The sediment entrained in this overflow is less than 25 p.p.m.

Solids which have accumulated in the pit are dug out once a week. This frequency varies with use. Solids are excavated by a crawler crane and discharged to a spoil area at one end of the pit. The dried material is removed periodically and sold as fill or otherwise disposed of. Any substantial quantity of returned concrete is dumped directly on the spoil pile; otherwise it is passed through the pit.

The rates of settlement, quantities of water required, etc., were determined by experiment. It was found that approximately 1,000 gallons of wash water per truck per day were required. The time of settlement was found to be 6 hours, a point at which the content was reduced to less than 40 p. p. m.

This project was designed and built by the engineering department of the Warner Company under the leadership of E. L. Shoemaker, director of engineering, and Irving Warner, vice-president.

ARE YOU PROFITING BY THE SALE OF LINTELS AND SILLS ?

If you are not, it may be because you are not fully familiar with the new and effective way of producing these wanted parts on the

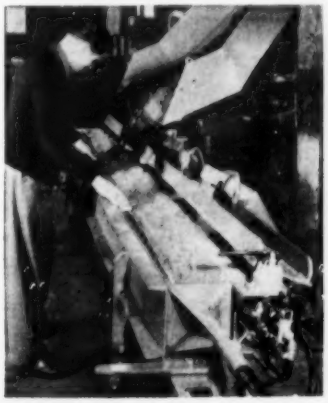
KENT LINTELATOR

With this machine, of which hundreds are already in use, you can expand your sales and profits without increasing your sales force.

Once the availability of machine-made lintels and sills is made known, builders buy them readily as their quality and desirability is immediately apparent.

Why should builders purchase more expensive steel lintels to be installed only by steel erectors when they can obtain reinforced concrete lintels that their own masons install without delay at much less expense?

Why also should you delay looking into the promising possibilities of this machine which eventually will be found in every block plant?



The KENT MACHINE COMPANY
CUYAHOGA FALLS, OHIO
CONCRETE PRODUCTS MACHINERY SINCE 1925

Servicised
form oil concentrate

★ Reduces Form Oiling Costs
★ Easier to handle...less bulk... less storage space...less waste
★ Provides good separating membrane

Servicised Form Oil Concentrate provides greatest economy and flexibility in use because it can be diluted with up to 24 parts of water without losing its adhering or protective qualities. Labor and haulage costs are minimized because sufficient quantities of form oil can be made up on the job as needed. The concentrate is harmless to skin and clothing . . . non-inflammable and resistant to freezing.

Available in 5 gallon cans and 53 gallon drums.

SERVICISED PRODUCTS CORPORATION
6051 W. 65th St. • Chicago 38, Ill.

Botched Batches

3-D Daze

THE Dragon Cement Company's fine bi-monthly magazine, *The Dragon,* seems to have earned the distinction of being the first publication in our field to erupt with a 3-D cover—an aerial view of the company's plant at Thomaston, Maine. We've contracted an acute case of blind staggers glaring at their September cover through the colored viewers which were mailed out with each copy, and we *still* haven't experienced any arresting sensation of depth, although others assure us that the effect is tremendous . Either our vision is ill-adapted to the modern age, or we're surrounded by a bunch of wishy-washy characters who just won't admit that it puts them on the ropes, too.

Anyway, the whole thing shows that the editors of *The Dragon* are right on their toes, and if any of them go blind looking at this and subsequent 3-D covers, we'll promise *never* to say we told 'em so!

N.C.P.A. Convention

(*From page* 224)

intend to make concrete masonry do the best possible job."

He considers imagination and creative ability extremely important contributions made by the designer to concrete masonry use. He believes that only the surface has been scratched, "as far as the decorative potential of the number and variation in units available from standard production is concerned."

●

Robert Schoales, speaking on the topic, *An architect views the concrete products industry,* pointed out that the advantages of concrete masonry could be much more effectively presented to architects and contractors if units were precision-made.

"The Ontario Association of Architects is agreed that if some difficulties were overcome, they would be happy to use more concrete block," he reported. "We find dimensions are not uniform. There is as much as a half-inch difference in height between the ends of the block."

"There is a variation in surface texture that makes it difficult to produce a uniform job."

"Block are chipped and damaged on trucks, or when they are tossed to the pile, or shot down a chute to the basement, with one man catching what two men pitch at him."

"We're getting too few jobs of a standard we would like. We're getting excellent work from a few contractors and manufacturers. They should be publicized."

enjoy PreCaster profits
from hard-to-make units like lintels

Be the first in your market to offer quantity production prices on concrete units that will strip through a straight box . . . slabs, highway guard rails, fence posts, joists, etc. *Relatively low investment! One man operation!* Write PreCaster Inc. • 5209 Beech Street • Cincinnati 17

Veteran Building —

(*From page* 225)

Champion drain tile machine, and units are steam-cured in a battery of four small kilns.

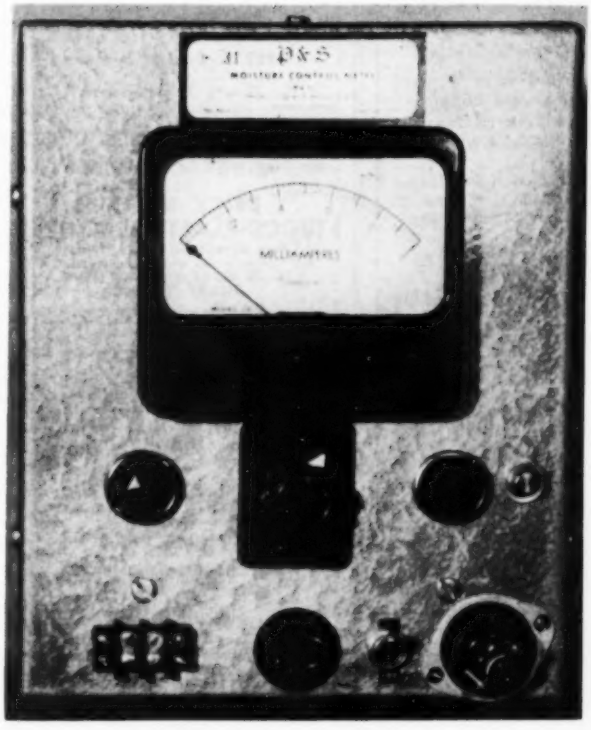
The concrete specialties plant produces precast steps, lintels, roofing tile, stepping stones, culvert covers, and other precast products. Major equipment includes a Kent Lintelator and a Dunn roof tile machine.

The ready-mix plant is the most recent of Veteran Block's endeavors. The company became co-owner of a dry batch plant located near the block plant last spring. A fleet of 10 Jaeger and Rex transit mixers handles concrete deliveries.

Officers of Veteran Block are Paul L. Barnes, president, who is a former army major; J. P. Jones Jr. and J. A. Bolich Jr., vice-presidents; Rufus Barnes, treasurer; and Betty B. Barnes, secretary. W. C. Chambers is production manager.

HERE IT IS . . .

THE TALK OF THE WASHINGTON CONVENTION



PERFORMANCE GUARANTEED!!!

Greatest Step Forward in Block Manufacture Since Vibration Also Works on Pipe and Cast Stone Where Tamp Method Is Used. Sold Installed or F.O.B. Atlanta for Customer Installation.

The P & S
MOISTURE CONTROL METER
FOR
SEMI-DRY CONCRETE MIXES

Automatically Checks Moisture in Raw Materials (Any Type Aggregates) After Being Deposited in Mixer and

INSURES UNIFORM ULTIMATE MOISTURE CONTENT OF EVERY BATCH!

*T. M. Reg. U. S. Pat. Off. Pats. Pend.

HOW IT WORKS . . . Through electrodes installed in the mixer, the P & S Moisture Control Meter measures the moisture content of the complete batch (any type aggregates, cement, and admixes) as received in the mixer from the batching bins. By pushing button on front of cabinet, additional water flows into mixer through a solenoid valve in water line and automatically cuts off when correct pre-determined moisture level has been reached. If no additional water is required, water will not flow through solenoid valve even though button has been pushed.

PROFIT FROM THESE BENEFITS:

- **No lost time from "too wet" or "too dry" batches.**
- **More uniform height of block.**
- **More uniform texture of block.**
- **Stronger block — Fewer culls.**
- **Cleaner plants — Happier workmen.**

Every P & S Moisture Control Meter is guaranteed for a period of 90 days from date of shipment or installation against defective workmanship or material. List of users supplied upon request.

Prompt Delivery • For Further Information Write, Wire or Phone

ROY DARDEN INDUSTRIES, INC.

PROMOTIONAL DIRECTORS
Post Office Box 95 — Northside Station
ATLANTA, GEORGIA **Cable Address — DARDEN • Phone Chamblee, Ga. 7-2567—7-2568**

LOWER COST

PACKER-HEAD WINGS

Proved to last as long or longer—yet cost considerably less. Write for prices

TEXAS FOUNDRIES
LUFKIN, TEXAS

PRICED TO SELL

Concrete Block Plant including real estate. NOW in operation.
2—Complete machines, air operated.
2—Mixers, 2—Lift Trucks.
4—Steam Drying Kilns.
Outside conveyor and skip hoist.
Main Bldg. 40x40, Kilns. 40x35.
Lincoln Welder—36 Steel racks, 5000 Steel pallets.
500 Aluminum pallets.
This includes Franchise for Special stone faced color block.
1950 Truck—dual tires—flat bed.
All inventory and miscellaneous tools included.

P.O. Box 176, Station A
Canton 5, Ohio

FOR SALE

BESSER "SUPER" VIBRAPAC

With one attachment. A-1 condition. Priced to sell.

Friendship Block & Brick Co.
11800 PLEASANT ST.
DETROIT, MICHIGAN
Telephone: Vinewood 2-0200

WANTED

Used Block Machines, Mixers, Elevators, Pallets, or any other type of Concrete Equipment in any kind of condition. Interested in renting site or space for Block Plant.

BOX NO. C-37, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Illinois

WANTED

Combination aggregate and cement batching bin with or without 2 bucket elevators. Give price and description.

BOX 243
Griffin, Georgia

FOR SALE

Appley Hi Speed Concrete Block Machine with mixer, skip hoist, pallets, and necessary operating equipment.

BOX NO. C-36, c/o CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago, Ill.

FOR SALE

One Stearns #9 Jolterete Machine with off-bearing hoist. 4"-8"-10"-12" mould boxes and 12000 pallets. Also racks for this machine and 28 cu. ft. skip loader and mixer used less than one year. All equipment in operation.

JOSEPH METZ & SON
8136 Ogden Avenue Lyons, Illinois

FOR SALE

Dump trucks and Dumpcretes

1—2 ton Dodge Dump truck, 1949. with 2 speed rear axle with 3 yard dump body and underbody hoist.
2—2 ton Ford Dump trucks, 1949, with 2 speed rear axle with 3½ yard dump body and underbody hoist.
1—2½ ton Reo 6x6 with 16 ft. flat top body..
1—2½ ton Reo 6x6 with 2 yard Model "C" dumpcrete body.
1—2 ton Ford, 1949, with 2 speed axle with 2 yard Model "C" dumpcrete body.
3—2 yd. Dumpcrete Bodies, Model "C" with hoist and hydraulic pump.

THE GRANITE CONCRETE BLOCK & COAL COMPANY
29 West Avenue, Elyria, Ohio Ph. 4716

FOR SALE

1—Kelly Semi Automatic Block Machine
1—Automatic Offbearer Mold Boxes 4" 8" 12" Racks and Pallets to make 2400 8" blocks per day. Some Pallets never used.
1—Kelly Mixer used about 1 year and extra set of new ni-hard paddles.
1—75' electric compressor.

MORSE C. & B. BLOCK, INC.
Route U.S. 7, One Mile North of Bennington, Vermont

GEORGE BLOCK MACHINE

2-Block George Machine with 2,000 pallets — $1200.00.

FLEMING MANUFACTURING COMPANY
Cuba, Missouri

WANTED

800 Lineal feet of Narrow Gauge Rails in good condition.

American Artstone Company
New Ulm, Minnesota

WANTED

Good used Packer-Head Pipe Machine and equipment for making sizes 6"-12" inclusive.

BOX NO. C-30, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

WANTED

1—150 or 200 ton cement and aggregate bin in good condition also a 1 cu. yard Weighbatcher.

LASTIK PRODUCTS COMPANY, INC.
Iroquois Building, Pittsburgh 13, Pa.

BUILD GOOD WILL

Advertising necessities for the block industry. Line Pins. Twigs. Modular Coursing Stick. Also the new Block Calculator and Wood Corner Block. All imprinted with your advertising. Complete catalog on request.

GERSON CO.
97 Dearing Road Mattapan, Mass.

FOR SALE

1450 Marine Plywood Pallets
(18"x18"x½")

Used 1 month—Reasonable

NORMAN BLOCK & TILE COMPANY
229 S. Central Avenue
Duluth 7, Minnesota

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE
"Fine Because of Their Fineness"
Ask for samples and recommendations
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

Priced To Sell: Stearns Model #7 Jolterete Pow. Car, 4" - 6" - 8" - 12" Moldboxes. 3000—8" Steel Pallets code "Disarm"; 520—8" Dub. Cor. Sash, 120 8" Bond, 1000—4" Steel Pallets code "Zorilla"; 1800—6" Steel Pallets code "Mercury"; 200—6" Dub. Cor. Sash; 200—6" Bond; 1000—12" Steel Pallets code "Paver". One pneumatic offbearer, boom and bracket. Spare machine parts. 51 Steel Block Racks for Fork Lift. Also 2000 lb. Hyster Fork Lift—good condition. All equipment is in operation. We are selling to replace with larger equipment. Phone, wire, or write:

Glass Mountain Brick Co.
Star Route Box 10
Tulelake, Calif.
Phone — Alturas, Calif.

FOR SALE

2—3½ yard Hi Discharge Rex Mixers on International Tandem Drive. In daily use—good condition. $4,000.00 each.

C. J. HORNER CO. INC.
Hot Springs, Arkansas

FOR SALE

250—Pressed steel pallets—8" x 16", clean as new, Oval Core, ends and steel sash types. Ask for rubbing. 1—Allis-Chalmers 10 HP., Push button starter. $35.00 Pallets—25c each. Prices FOB our station.

F. W. COFFMAN
Box 329 Harrisonburg, Virginia

FOR SALE

One Dunbrick machine, used less than one year. Excellent condition.
Three Drying Racks for 2700 bricks and pallets.
All for $2500.00

VETERANS BLOCK COMPANY
Corsica, Pennsylvania Phone 18R-31

YOURS TO SERVE

If you have not found the equipment you are looking for, the research dept. of The Concrete Manufacturer can and will gladly assist you. Tell us what it is . . . Write to

Research Dept.
C/O The Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Illinois

UNBREAKABLE

PALLET RINGS

Write for full information

TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

Go-Corp. "Prince" Two-At-A-Time plain pallet. Automatic pallet feed.

Attachments for 12", 8", 6". 4" & 4" solids.

Can be seen in operation any time. This machine is in excellent condition, but larger machine is to be installed last of March. Write, wire or Call:

BLUE LAKE BLOCK CO.
P.O. Box 319 Phone TU 6-1661
Hopkinsville, Ky.

PAK-CRETE PRODUCES LOW WATER ABSORPTION BLOCKS

The Pak-Crete high speed Block & Brick machine has controllable tamping by the operator producing high test strength block 180 to 240 per hr. Blocks are so dense and strong that they are practically water proof without the use of any water proofing in the mixture. Various size molds to your specifications. Write for circular for further information.

Agents and Distributors wanted.

PAK CRETE SALES
3400 W. Adams St. Chicago, Illinois

FOR SALE

Concrete batch and Mixing plant

complete with 55 cu. yd. aggregate & cement bins; 2 cu. yd. mixer and semi-automatic cement & water batchers; under track screw conveyor; 1032 bbl. cap. cement silo with elevator.

Blaw-Knox under track car unloader.

Model 200D Pumpcrete with pugmill remixer, both gas engine driven, complete with pipe and accessories.

All in good condition and ready for immediate delivery.

CRAMER-VOLLMERHAUSEN CO., INC.
2601 Conn. Ave., N. W., Washington 8, D. C.
Phone North 7-4896

STOP *that* WATER

With FORMULA NO. 640
A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—*free sample*
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

ROCK-TEX BLOCK SPLITTER

CHECK THESE FEATURES OF THE MOST POWERFUL AND TROUBLE-FREE BLOCK SPLITTER MADE.

- BIG 5" HYDRAULIC CYLINDER
- SEMI-AUTOMATIC
- AIR-OPERATED
- 22 TONS PRESSURE
- SPLIT BLOCKS 2" to 8" HIGH; 18" LONG
- NO ADJUSTING FOR BLOCK HEIGHTS
- HIGH PRODUCTION—NO CULLS
- SAFE AND QUIET OPERATION

Write for Complete Information
MFG'D BY
KUBIAK CONCRETE PRODUCTS CO.
ROCK-TEX DIV.
1779 CLINTON ST. BUFFALO 6, N. Y.

FOR SALE

Columbia equipped block plant located in fast growing New Jersey community. All equipment including Cyclotherm Steam Generator, 2 Truckman, 1½ yard front end loader, new fork truck, racks, pallets, welders, etc. Complete list and details on request. Full price $25,000. Illness in family reason for selling.

BOX NO. C-33, c/o
THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Illinois

FOR SALE

BRIKCRETE MACHINE — MODEL T-40. Any reasonable offer will be accepted.

THE SOUTHERN NEW ENGLAND CONTRACTORS SUPPLY CO.
P. O. Box 1190 New London, Conn.

IDLE EQUIPMENT WASTES MONEY

A good way to get back a large part of the money you spent for equipment you're no longer using is to SELL IT.

And, the best way to sell it is through the Concrete Manufacturer, the Market Place for supplies and services.

Let someone else have the benefit of equipment you can't use in exchange for hard cash you can use in other ways.

So important is the Concrete Manufacturer used equipment section that many readers (and there are over 24,000 of them—all potential buyers) turn to it first when C M arrives on their desk.

Tell us what you have to offer for sale or trade, we'll set up the ad for you. Mail today and watch the results.

THE CONCRETE MANUFACTURER
431 South Dearborn St., Chicago 5, Ill.

FOR SALE

One 3 yard Smith concrete mixer (4½ yard agitator) mounted on Ford F-8 truck in good used condition and operating in our fleet daily. We have too many 3 yard trucks and not enough 6 yard trucks. Will give reasonable terms if desired.

GRAYSON LUMBER COMPANY
P. O. Box 1311 Birmingham, Alabama

FOR SALE
CEMENT BLOCK EQUIPMENT

1—Miles Elevator and Feeder, Below Floor Model
1—Miles Face Down Block Machine
1—C G 14' Mixer

Elevator and Mixer are brand new.
THE FERGUSON LUMBER COMPANY
Rockville, Indiana

FOR SALE

4,000# Lewis Shepard fork lift truck. New Wisconsin motor. Hard rubbers.

MICHIGAN CERTIFIED CONCRETE PRODUCTS, INC.
1235 Hoyt St. S.E.
Grand Rapids, Michigan

FOR SALE

1—Concrete Pipe Machine—12"-60"
2—Mixer & Skip. First Class condition.

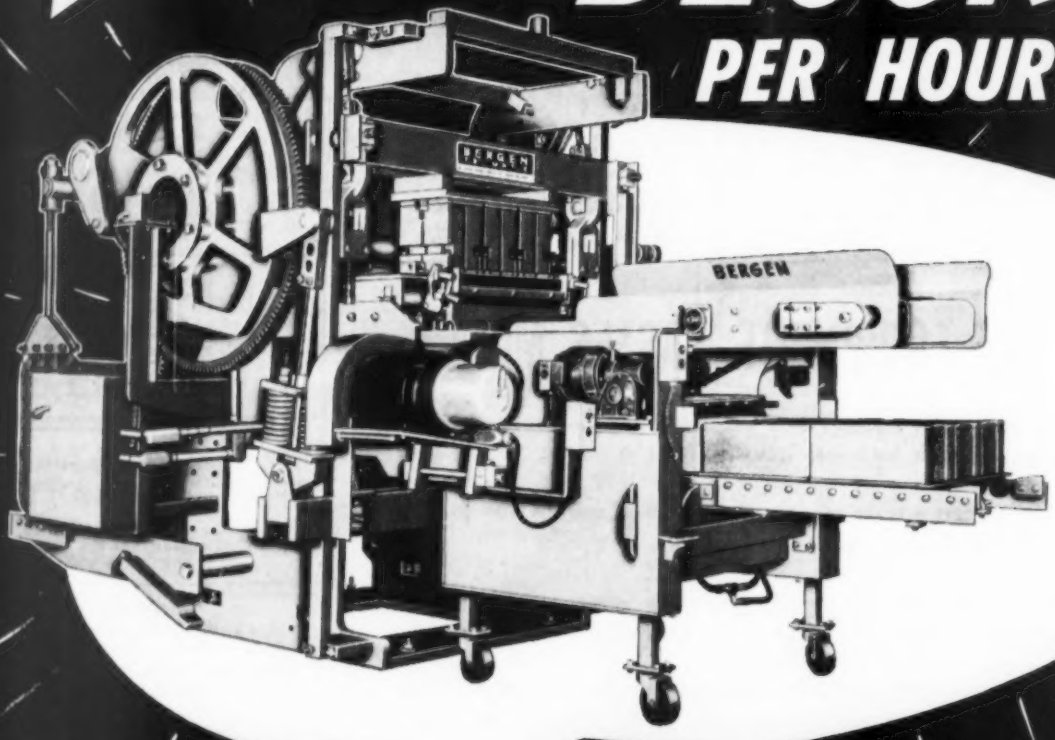
BOX NO. A-18, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

CEMENT COLORS

Write for free samples and prices of LANSCO CEMENT COLORS packed in 33 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
LANDERS SEGAL COLOR CO
71 Delevan St. Brooklyn 11, N. Y.

1,000 (8" EQUIVALENT) GOOD BLOCK PER HOUR



BERGEN
TRI-MATIC

AVAILABLE 3 WAYS
- ON LEASE BASIS
- LEASE with OPTION TO BUY
- OUTRIGHT SALE

Write for literature

BERGEN MACHINE & TOOL CO., INC., NUTLEY, N. J.

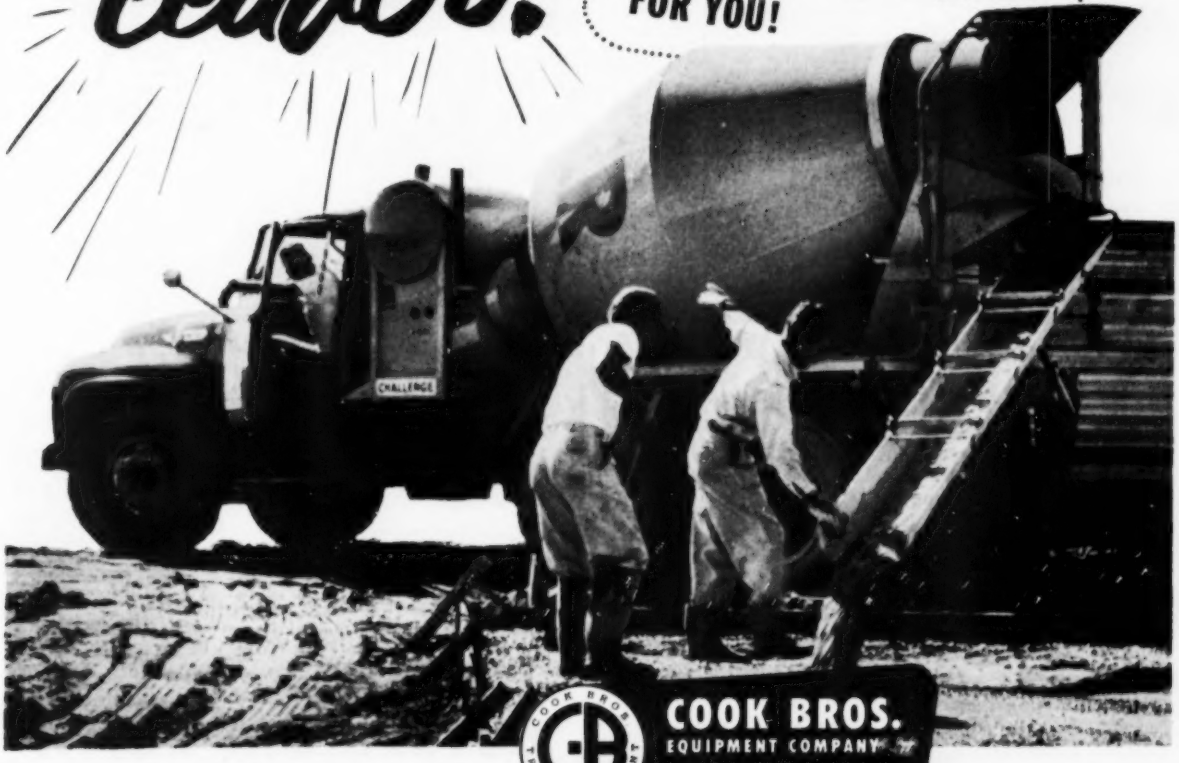
AGAIN in '53 CHALLENGE is the leader!

There's no question about the "big swing" to Challenge Mixers... sales records prove it!

According to available records, ready-mixed concrete operators (for the second straight year) purchased more Challenge Mixers than any other make... giving additional proof that Challenge *leads the field* and Sets the Standard of the Industry.

And, no matter how you say it — "More Drum Volume Per Dollar Investment" — "Lower Annual Cost" — "Long, Dependable Service" — basically, there is just one BIG reason for Challenge preference

CHALLENGE MIXERS MAKE MORE *Profit* FOR YOU!



COOK BROS. EQUIPMENT COMPANY

Exclusive National Distributor For CHALLENGE TRUCK MIXERS. *Standard of the Industry*

MEMBER N. R. M. C. A.

YOU CAN COUNT YOUR READY MIXED PROFITS *before they're hatched* . . . if you plan with the Butler Engineer

Every Ready Mixed Concrete Plant is an individual and complex problem. It involves much more than the Plant itself. As examples:

SITE (The BUTLER Engineer is widely experienced in zoning, adverse traffic concentrations and yard-mile costs.)

TERRAIN (The Butler Engineer can decide whether or not ramp-loading is advantageous. How to use terrain for conveyor and stock pile economies.)

MARKET (The BUTLER Engineer knows how to appraise the market potential.)

And all of these factors govern the Ready-Mixed Plant itself . . . Shall it be automatic or manual? . . . Shall it be transit or central mix? . . . How big a mixer . . . And a host of other questions! But the point is:

You CAN count your profits before they're hatched . . . if you'll call in the BUTLER Engineer.

Bulletin 185 is like a FREE trip all over the country to inspect BUTLER Ready Mixed Plants. You'll find plants of every size, plants that meet a variety of conditions. It's a good preliminary to a consultation with the BUTLER Engineer — Send for it — today.

BUTLER BIN CO.

987 Blackstone Ave.

WAUKESHA, WISCONSIN

Brute Strength

Power Steering

Hauls 7 cubic yards

(and complies with most state laws)

The New **REO** Model F-536M

This Reo engineering achievement carries up to 10,000 lbs. of extra payload . . . 7 cubic yards as compared to the normal 4½ yards. Here's how: Added body and payload weight has been shifted forward to the new, heavy duty 14,000 lb. front axle and progressive type front springs.

Yet, with all this weight "up front" the new Reo steers and handles like a passenger car thanks to Reo's new power steering. Reo integral power steering unit provides all purpose efficiency on the highway, off-highway and in city traffic. Has direct mechanical connection to permit manual operation if desired.

The rugged rear axle is the new 36,000 lb. Timken tandem double reduction or inter-axle differential drive to provide positive traction under all operating conditions. Surging power for every need is provided by the 160 hp Reo Super Gold Comet. This power-sensation of the trucking world is also outstanding for economical operation.

For complete information, see your Reo Dealer or write:

REO MOTORS, INC. LANSING 20, MICHIGAN

Chase Block Racks

now only...

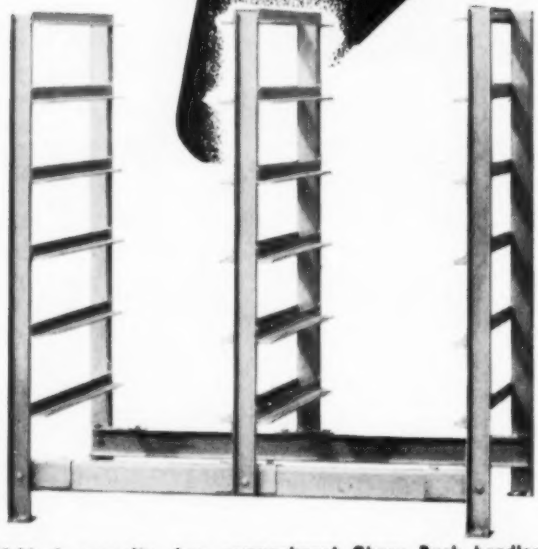
$47.50

F.O.B. COLUMBUS, OHIO

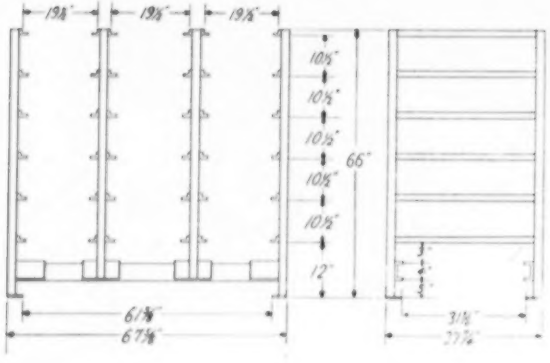
dimensions can be changed to suit your plant at no extra charge

Improved rigid side sill connection and sturdy construction in Chase Racks mean years of dependable service.

Chase Racks are made of ¼" thick steel, are shipped knocked down for low freight costs. Practical design permits easy assembly . . . no special tools or welding are required. Contact Chase for all your rack requirements. All Chase racks receive one shop coat of paint.



72-block capacity, two compartment Chase Rack handles 24, 18½" x 26" pallets for use with fork or platform lift truck. Has ample clearance for magnetic offbearer.



3-compartment Rack

$60.00

F. O. B. COLUMBUS, OHIO

72-block capacity, 3-compartment rack can be built to handle either 18½" x 18½" as shown, 18" x 18" or 18" x 20" pallets. Dimensions can be varied. Write us if your plant requires a specially designed rack . . . we'll design and build a rack to suit your requirements exactly.

Serving the block industry for over 50 years.

Chase FOUNDRY & MANUFACTURING CO.

2300 PARSONS AVENUE • COLUMBUS 7, OHIO

Trinity White ... the whitest white ...

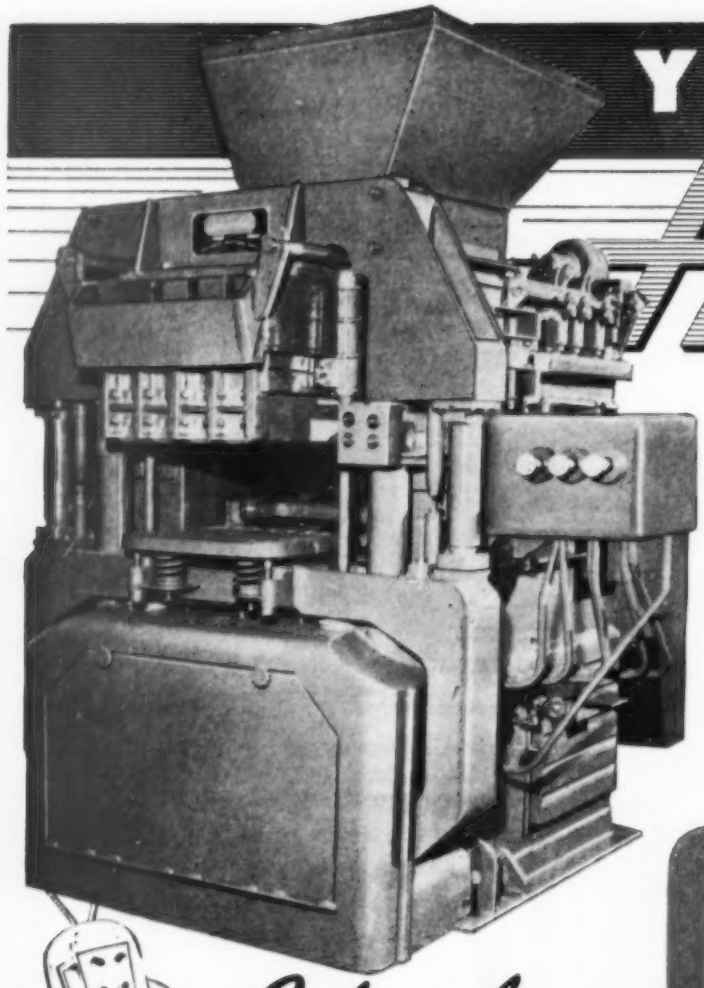
it is a true portland cement

USEFUL in almost every type of building, both inside and outside. As architectural concrete units or as stucco or cement paint, it emphasizes architectural perspective and detail. It has a high light-reflection which gives beauty and special utility to many interiors. ¶ Trinity White's extra whiteness gives truer colors where pigments are added. Widely used in terrazzo for its contrast-y white and better color effects in either simple or ornate designs. Meets all Federal and ASTM specifications. Ask for TRINITY White.

as white as snow

A Product of GENERAL PORTLAND CEMENT CO. • Chicago • Dallas • Chattanooga • Tampa • Los Angeles

YEARS Ahead



in design
in production
in cost...

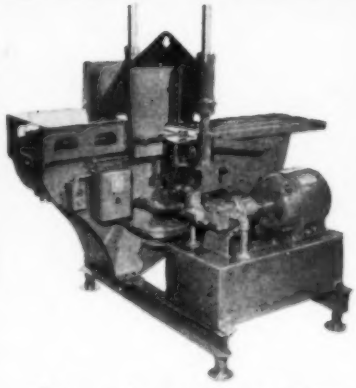
Columbia's advanced engineering puts tomorrow's concrete block machine on the market . . . today!

Columbia MODEL 8
2-BLOCK

Here is the machine of tomorrow . . . Rapid cycling for top production . . . Fully-automatic electronic controls . . . Easy quick mold change for maximum flexibility of output . . . Precision height control—can't make a wrong-size block! The Columbia you buy today will still be making profits for you many years from now!

- **4-6 Cycles Per Minute**
- **Fully-Automatic Electronic Controls**
- **Vibration Under Pressure**
- **Standard Plain Pallets**

***District Offices:* Wisconsin, Ohio, South Carolina, Mississippi, Florida, New Jersey, Virginia and California.**



Columbia BLOCK SPLITTER
Shows Way to New Profits!

Columbia's semi-automatic and fully-automatic block splitters expand your profits through efficient, trouble-free performance...net you a larger return on your machinery investment! There's a Columbia Block Splitter to meet the demand of your own market!

Write today for complete catalog.

Columbia MACHINE

Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON
Factory Branch and Warehouse at Mukwanago, Wisconsin

4 1/2 CUBIC YARD MIXER
GUARANTEED BY MANUFACTURER TO MIX
5 CUBIC YARDS
AND CERTIFIED BY THE TRUCK MIXER MANUFACTURER'S BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK MIXERS AND AGITATORS AS APPROVED BY THE N.R.M.C.A.
6 1/4 CUBIC YARD AGITATOR
UNLESS RATED LOWER ON THE MANUFACTURER'S DATA PLATE

Under the new standards of the Truck Mixer Manufacturers Bureau,* the guaranteed capacity of all Jaeger "Mix Plus" truck mixers has been increased by ½ cubic yard.

With this increase in capacity Jaeger offers the "Maxi-Loader," a lightweight open-end loader that speeds the charging and discharge of larger batches and prevents their spilling while in transit.

Jaeger guarantees you more capacity,
and an open-end loader to handle it

Faster, cleaner charging; no cement blow-back: New hopper has largest throat opening of any open-end loader and also a longer reach to drop materials deeper into drum. Re-designed blade tips allow materials to fall freely.

No spillage on steep grades or quick starts: Deeper blades with specially shaped tips raise the water-level of the drum, insuring the maximum payload capacity possible with an open-end type loader.

Faster, steadier discharge: New, deep-lipped discharge blades prevent "fall-back" of material, insuring positive and uniformly faster discharge assisted by free-flowing apron design. Nothing to obstruct the discharge of lowest slump concrete.

To fit your operation, Jaeger Mix-Plus units are also available with either sealed end-loader or top-loader with sealed discharge door, permitting maximum agitator payloads. For full information, see your Jaeger distributor or ask for Catalog.

THE JAEGER MACHINE COMPANY

602 Dublin Avenue • Columbus 16, Ohio

COMPRESSORS • TRACTOR LOADERS • PUMPS • CONCRETE MIXERS • PAVING MACHINES

VIBRAPAC OWNERS CAN TELL YOU.....

OSWALT SERVICE has improved the efficiency and production of many plants

OSWALT SERVICE can do the same for you! It's an investment in production that pays dividends in extra profits.

The early attempts of purchasers to increase the output of vibrapac machines fell short of success until Oswalt engineers tackled the problem in a big way.

Over a long period of years, many experiments were made and new ideas in construction and operation of the vibrapac were repeatedly tried out to improve block production.

As a result, the Oswalt type of vibration was developed, giving higher moulding speeds and boosting production more than 50%. A new method of chain delivery of the green block was found to prevent cracking at higher speeds. Devices for height and density control were perfected to maintain uniform quality.

By the time patents had been applied for in 1950, more than a hundred thousand dollars had been spent in this productive research and development work for the benefit of the industry.

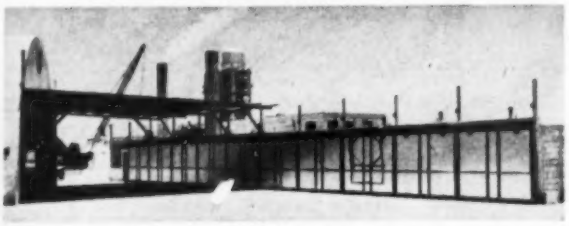
With this background of experience, Oswalt Service can give you the maximum capacity of your vibrapac without sacrifice of quality—with resulting increase in plant efficiency and profits.

What you pay for Oswalt Service not only comes back in terms of greater production, better quality, high plant efficiency and lower costs—but helps to further the research for future improvements and developments.

Write for OSWALT BOOKLET Today

OSWALT ENGINEERING SERVICE CORP.
1335 Circle Ave., Forest Park, Illinois
Phones: EStebrook 8-3666 · FOrest 6-3898

SAVE FUEL • REDUCE CURING TIME • CUT COSTS • UP PROFITS with *Standard* KILN DOORS!



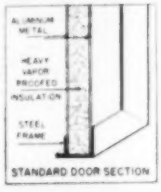
● This is the modern STANDARD kiln door installation of Portland Industries Inc., Riviera Beach, Florida. C. R. Wilson, the firm's Executive Vice President, writes: "Our Standard kiln doors have been very satisfactory."

To suit your individual requirements, three types of STANDARD kiln doors are available—the sliding carrier-type (shown above), the top hinge-type (which is pulled up by a hoist), and the side hinge-type.

CHECK THESE FEATURES

√ Heavy Aluminum Sheets on Both Sides of Thick Vapor Proofed Insulation.

√ Rugged Steel Frame.



Get the Best — Send for Details Now
STANDARD DRY KILN COMPANY
P. O. BOX 5708 . . . . INDIANAPOLIS 21, IND.

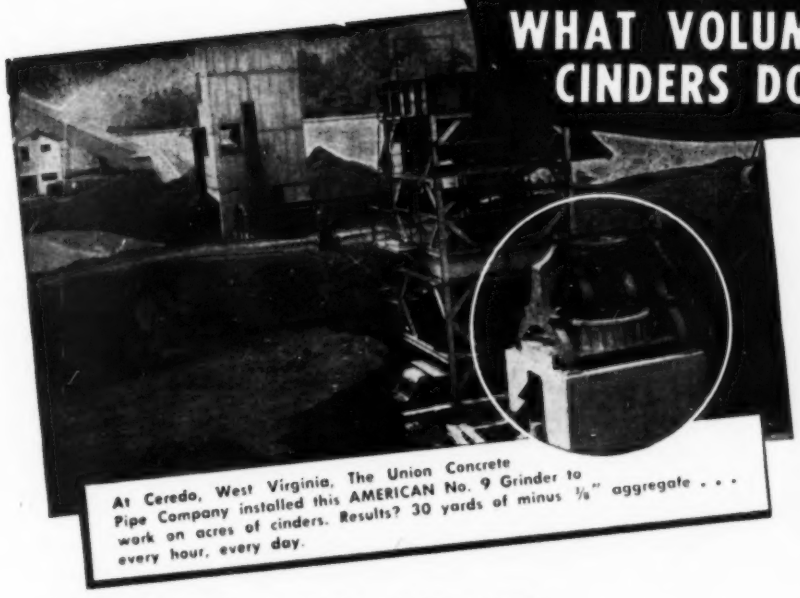
Let
FLEMING
MANUFACTURING COMPANY
show you how to build
BIG PROFITS for SMALL PLANTS
with the famous FMC-180

WRITE TODAY FOR COMPLETE INFORMATION, PRICES, TERMS ON THE

FMC-180 automatic concrete block machine
FMC-400 fully automatic double block machine
FMC Mixers; one, two, three and four-sack sizes
FREE – Concrete block plant layout!

189 FLEMING AVENUE • CUBA, MO. • Phone CUBA 400

WHAT VOLUME OF GROUND CINDERS DO YOU NEED?



At Ceredo, West Virginia, The Union Concrete Pipe Company installed this AMERICAN No. 9 Grinder to work on acres of cinders. Results? 30 yards of minus ⅜" aggregate . . . every hour, every day.

Select from 8 AMERICAN Grinders Hourly Output 4 Yards to 75 Yards!

Write your own ticket for your plant's cinder-grinding requirements . . . one of the 8 AMERICAN Grinders will give you the output needed . . . deliver minus ⅜" mesh aggregate without additional separation! Your AMERICAN Grinder will require minimum maintenance . . . will conserve power . . . will help produce low-cost, top-quality cinder block. Write . . . wire . . . phone . . . ask for an AMERICAN grinding expert to help you lick your problem.

CAPACITIES . . . YDS. PER HOUR

No. 5 4	No. 9 30
No. 6 6	No. 9A 30
No. 7 12	No. 418 50
No. 8 20	No. 384 75

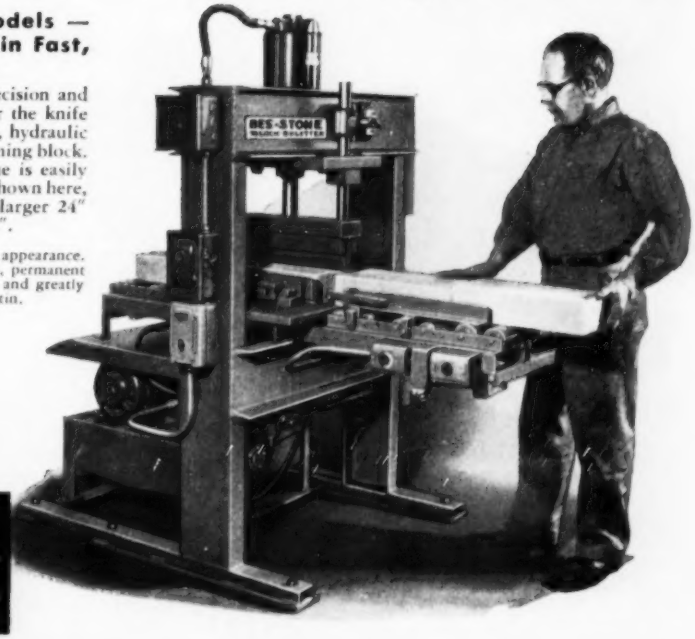
American GRINDERS by
W. A. RIDDELL CORP.
BUCYRUS, OHIO

BES-STONE Block Splitter

Made in 2 Sizes — 18" and 24" Models — Produces 960 Split Block per Hour in Fast, Automatic Operation

Splits block in a straight line, with speed and precision and with the utmost safety. The block is placed under the knife automatically . . . the blade descends with a smooth, hydraulic action . . . and the split block is ejected by the incoming block. The operator is always at a safe distance. Machine is easily adjusted for various block heights. The 18" model, shown here, splits block 16" or 18" long, 1⅝" to 8" high. A larger 24" model splits any length up to 24", heights up to 8".

BES-STONE is a new masonry unit with a quarried stone appearance. Can be produced in many sizes and in a series of attractive, permanent colors. No conflict with conventional block. It complements and greatly increases sales of standard stripper block. Write for Bulletin.



BES-STONE *the Split Block with Character*

BESSER MFG. CO. • Complete Equipment for Concrete Products Plants • Alpena, Michigan, U.S.A.

A 7571-½ H

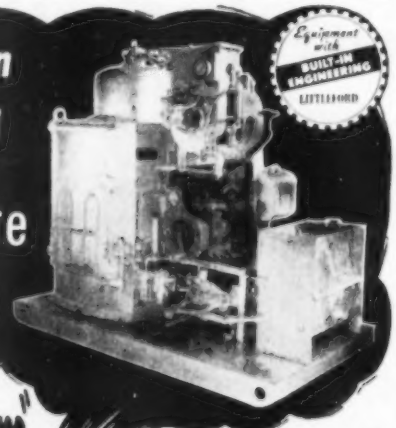
YOUR KEY TO
POSITIVE ANCHORAGE
IN CONCRETE

PERMANENT RUST PROOF
THREADED SOCKET

SEE YOUR BLD'G. MATERIAL SUPPLIER
OR WRITE TO:

STAR EXPANSION PRODUCTS CO.
147 CEDAR ST. N. Y. 6, N. Y

Modern Curing FOR Concrete Block



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Curing Concrete Products by Steam now can be done the "Low-Cost" way by using a Littleford "KWIK-STEAM" Generator. These compact units are the fastest steam-producing generators ever designed, they deliver steam in 2 minutes' time from a cold start, and only operate when steam is needed. Being fully automatic they require little attention and do not need a specially trained operator. Made in models to fit any curing space; sizes range from 20 to 165 B. H. P.

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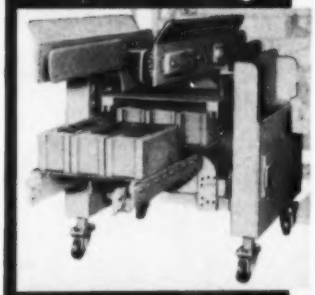

Detachable to roll away in 30 seconds!

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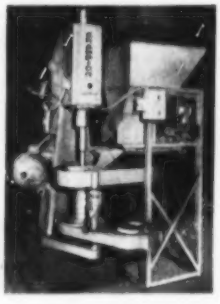

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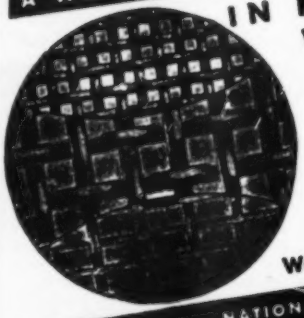

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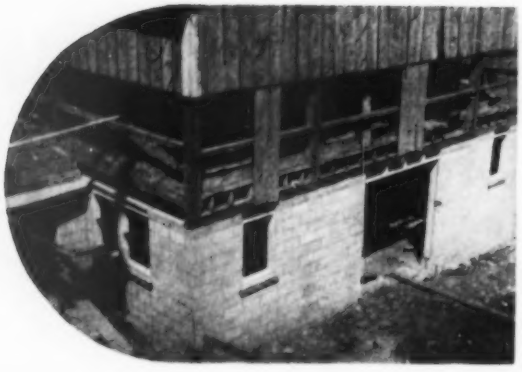

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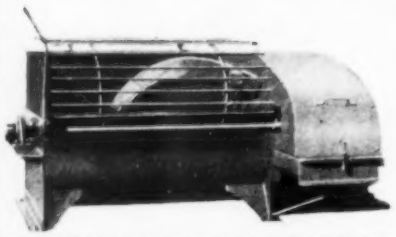

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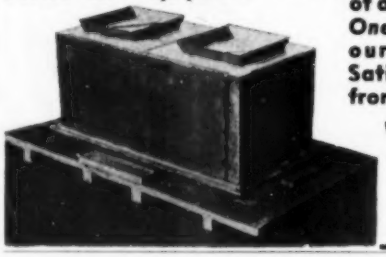

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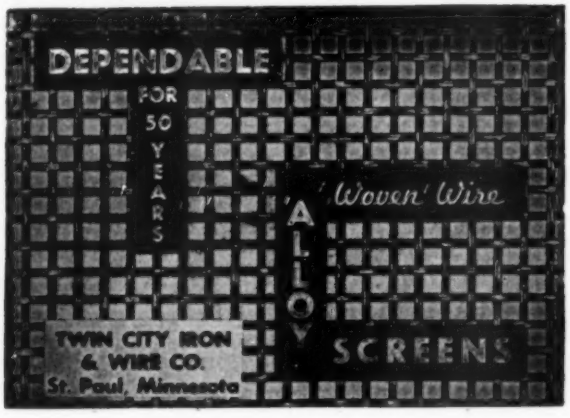
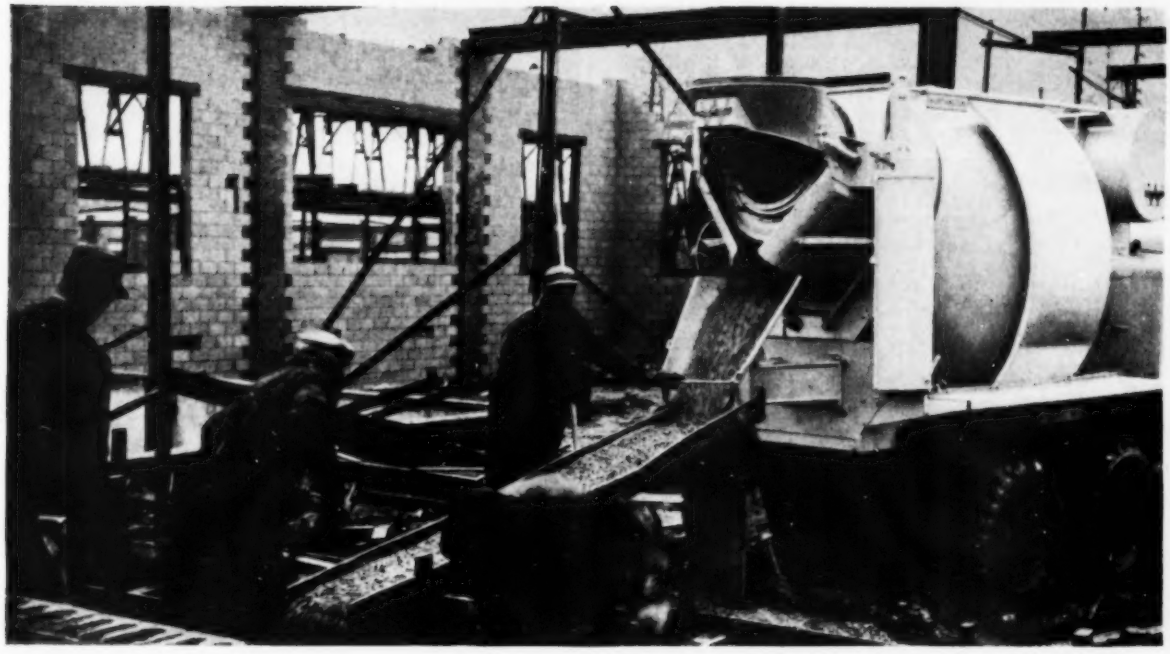
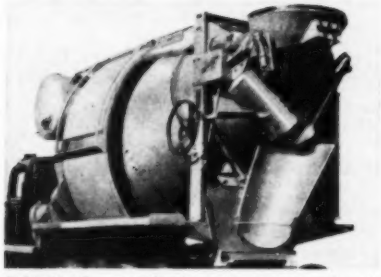
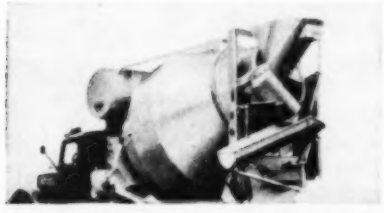




Get greater payload capacity with Worthington Hi-Ups



MODEL LC—standard equipment: top hatch loading door, closed end charging door, running boards, side shields. Approximate weight—7100 lbs.



MODEL LO—standard equipment: open end drum with fixed hopper, inspection plate, no side shields or running boards. Approximate weight—6300 lbs.

In Worthington Truck Mixers, engineered weight distribution brings the center of gravity well forward of the rear axle—enabling you to carry the maximum legal payload. Scale weight is held to a minimum, with no sacrifice in strength or operating efficiency.

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MODEL DF—Pallet Toter with hand pump (3000 lb. capacity).

MODEL DT—2000 lb. Platform Utility.

MODEL DR—Truc-Tor for cargo trains. Up to 6500 lbs. on dry, level concrete.

TRUCK-MAN OWNERS

Convert your present Truck-Man trucks with the Packaged Power Lift Conversion Unit. New larger diameter lift cylinder and all other parts required by change are included. Easily and quickly installed.

Want to reduce your handling costs? Clip and mail this coupon today!

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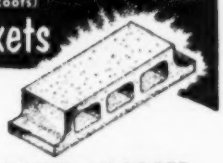
Opens Up New Markets



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Gives FLOORS and ROOFS Lifetime Permanence . . . Cuts Construction Costs!

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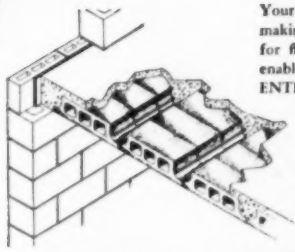

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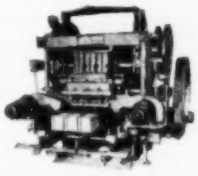

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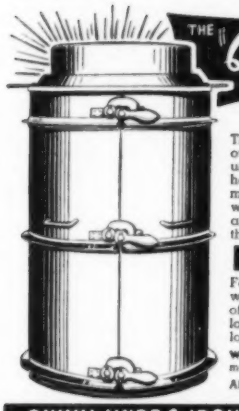

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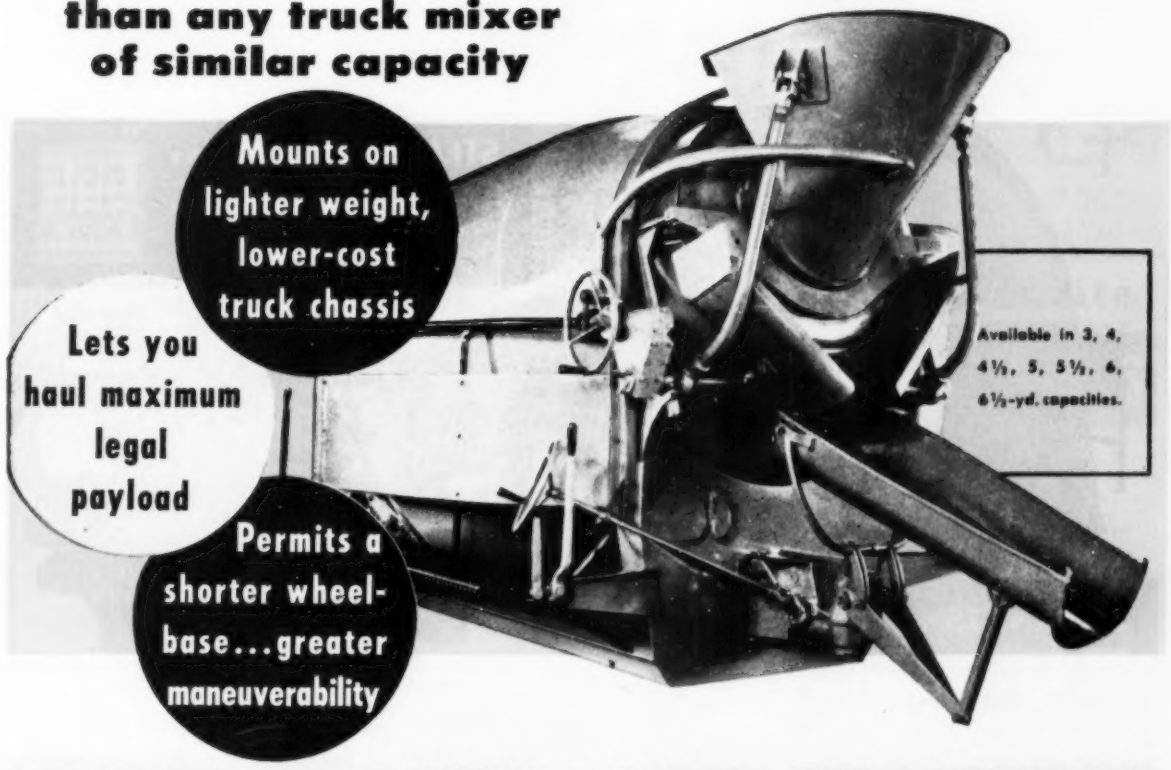
Shorter and lighter!

than any truck mixer of similar capacity


Mounts on lighter weight, lower-cost truck chassis
Lets you haul maximum legal payload
Permits a shorter wheel-base...greater maneuverability
Available in 3, 4, 4½, 5, 5½, 6, 6½-yd. capacities.

LE ROI-TRANSO LOAD CHAMPION

You carry full rated capacity within gross vehicle weight limits . . . make more round trips daily . . . and cut costs all around — with the Le Roi-Transo Load Champion.

Light weight and compactness are only two of the reasons why you enjoy such profitable performance. The patented Transo direct drive is another. It reduces non-productive dead-weight — eliminates ring gears, chains, and sprockets; thus cuts replacement and maintenance costs.

The Load Champion has many other equally practical features, other operating advantages. It has good mixing action. It loads fast. It discharges slump concrete speedily. It starts and discharge-reverses with a full load without shock.

Ask your Le Roi-Transo distributor to give you all the details. Or write for bulletin.

Le Roi-Transo DeLuxe Transe-mixer, 12" to 17" shorter than any other mixer-agitator of equal capacity—1,000 to 1,600 lbs. less dead-weight. 3, 4, 4½, 5, 5½, 6, 6½-yd. capacities. Available with fluid couplings or torque converters.

TRANSO DIVISION LE ROI

YD-11

LE ROI COMPANY *Plants:* Milwaukee • Cleveland — Greenwich — Dunkirk, Ohio • Coldwater, Michigan.

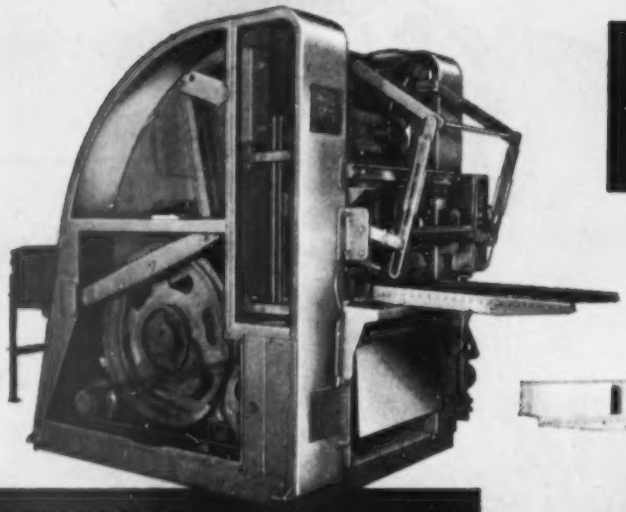
A Subsidiary of Westinghouse Air Brake Co.

TRANSO DIVISION

3716 W. WISCONSIN AVE. • MILWAUKEE 8, WIS.

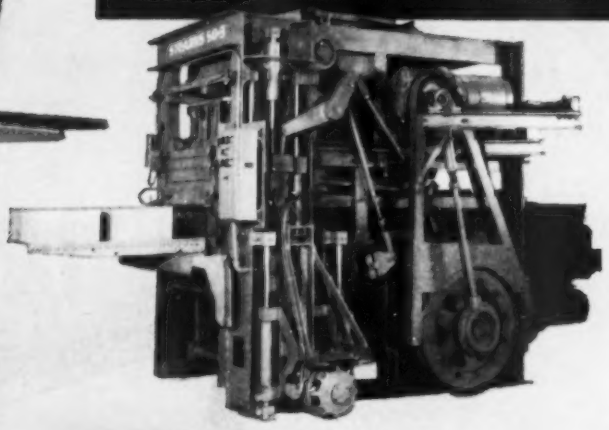
STEARNS...THE IDEAL MACHINE

...The Lowest Block Production Cost For Any Plant!



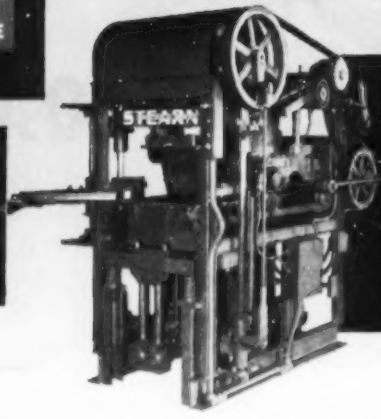
STEARNS 50-3* for the large producer. 3-blocks-per-cycle. *Absolutely—the lowest block production cost per machine dollar.* Plain pallets.

3 BLOCKS PER CYCLE



STEARNS 15 for the *maximum* producer. 3-blocks-per-cycle. *Maximum production, minimum maintenance.* Plain pallets. This is the peak!

3 BLOCKS PER CYCLE

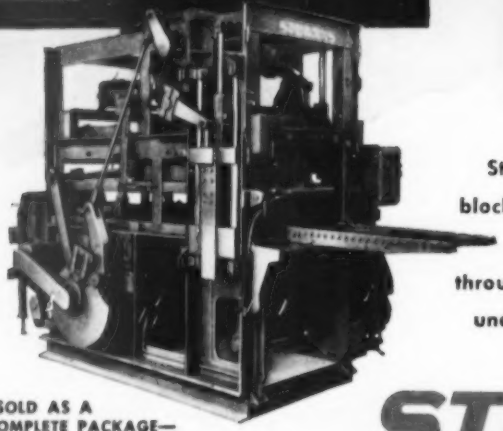


STEARNS ZIPPER... for the smaller plant. *Semi-Automatic. Large machine quality — small machine cost.* Cored pallets. Built to *expand* any small manufacturer's market.

1 BLOCK PER CYCLE

2 BLOCKS PER CYCLE

STEARNS 50* for the medium-large plant. 2-blocks-per-cycle. Economy—*plus!* Plain pallets. Really turns them out!



Stearns makes *the* machine in *any* field of concrete block manufacture. Fully automatic, plain pallet, one-man operation. Perfect blocks through Stearns Unidirectional Vibration under Pressure. Minimum downtime.

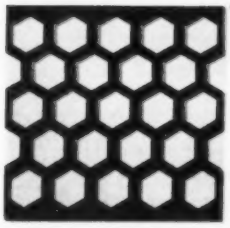
*SOLD AS A COMPLETE PACKAGE—
Complete with Standard Attachment, Magnetic Offbearer and Automatic Pallet Return.

STEARNS

MANUFACTURING COMPANY • INC

ADRIAN • MICHIGAN

KEY TO SUCCESS



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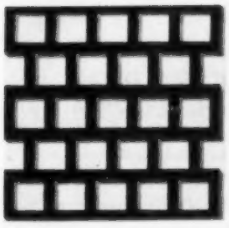
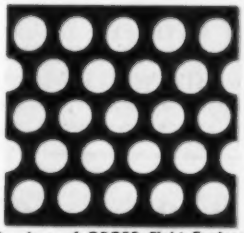
CROSS SCREENS insure less blinding, longer screen life, and accurately sized product. Specify "CROSS" for maximum output and minimum operating expense.

CROSS HEXCREEN



CROSS SQUARE



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CROSS Perforated Steel Plates and Sections for Vibrating, Shaking and Revolving Screens.

Look for this Stamp on all "Cross" Products

the Sign of PLUS QUALITY for PLUS PERFORMANCE

CROSS ENGINEERING COMPANY

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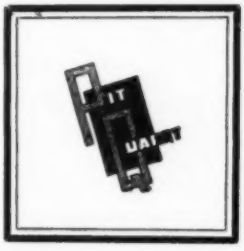
Services of CROSS Field Engineer and Technical Data on Request

OVER 17,000 POTENTIAL BUYERS

AT YOUR FINGERTIPS



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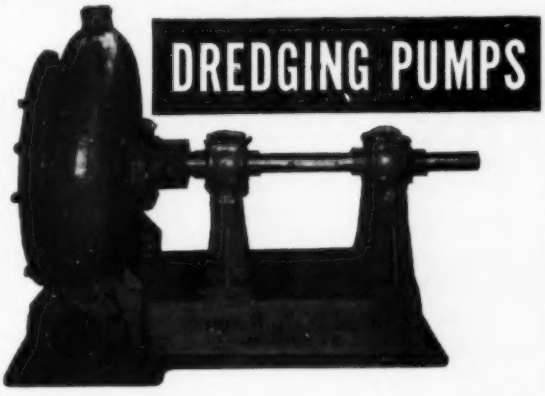

performance-proven on the toughest jobs

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Hetherington & Berner sand and gravel pumps are available in two general types: *STANDARD*, (4", 6" and 8" sizes) with semi-steel parts, for ordinary working conditions and moderate heads; and *DREADNAUGHT*, (6", 8", 10", 12" and 15" sizes) with manganese steel parts, for heavy duty jobs with stringent head conditions.

Write for Bulletin DP-147.

HETHERINGTON & BERNER INC.

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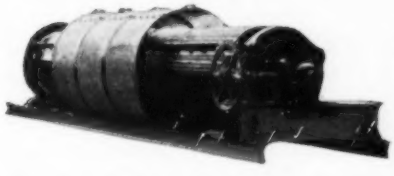
Clean Sand and Gravel . . . a *Must* for Contractors



RELIANCE Roller Bearing Washing Screens with special scrubbing sections insure thorough breaking up of the material.

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. . . at new low cost with

RELIANCE Equipment

FOR fast economical production, use the high-efficiency washing and screening methods, now available in Reliance Machinery. Dynamic improvements in the past five years have made Reliance the standard equipment in modern installations everywhere. If you require a single machine, a combination of units or a complete plant, you can depend on Reliance experience for best results.

RELIANCE Paddle Type Wash Box with long gradual incline gives a clean, dewatered product that can be loaded or stored without segregation.

UNIVERSAL ROAD MACHINERY CO. **KINGSTON, N. Y.**

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CLOSING DATE: 20th OF THE MONTH PRECEDING DATE OF PUBLICATION

OTHER CLASSIFIED ADVERTISING PAGES FROM 262 to 271. Also pages 236 & 237.

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If you have a problem drilling hard rock, we can solve it for you, give you holes fast, and save you money. No rock is too hard for us. Write or phone

PERRY CONSTRUCTION COMPANY

825 Olive St., Scranton 10, Pa.

Phone: Scranton Diamond 3-0642

Specialists in Hard Rock Blast Hole Drilling

WANTED

Secondary crusher, 30 to 40 ton.
Bin, 30 to 40 ton.
2 to 2½ yd. dragline.
Super C Tournapull with W-210 Wagon or comparable.

FOR SALE

Hough H M Payloader, 1½ to 2 yd. capacity. New Spring 1953. Four Wheel Drive.
P & H, 255 A, ¾ yd. Shovel, also available, hoe and crane boom.
Byers, Model 83, ¾ yd. shovel.
1¼ yd. Lima Crane with fair lead.
International I-9 front end loader, also 3 to 4 yd. earth mover.
Barber-Greene, Model 52 bucket loader on cats.
24" Hammermill with 40 HP, 220/60 cy. 3 phase motor with starter and V belt drive.
1951 Ford F 8 truck tractor with power 5th wheel.
Gruendler 24" x 5' reciprocating feeder.
35' x 18" portable conveyor.
24' x 24" conveyor.
Allis-Chalmers pumping unit, 90 M GPH at 100' head with 50 HP motor and starter 440/60 cy.
Shovel attachment for 150 P & H.

GREENBANK SAND & GRAVEL CO.
1146 Summit Street North Barberton, Ohio
Phone - Akron - PLaza 3-8481

FOR SALE

1—Model 111M—Marion 4 Cu. Yd. Shovel—New in August, 1953.

2—Model D-8—Caterpillar Tractors—1 equipped with Hydraulic Controlled Angledozer, and 1 equipped with Cable Controlled Angledozer. New in August, 1953.

2—Model 36TD—22 Ton Rear Dump Euclids equipped with Power Steering and Torque Converter. New in August, 1953.

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The above mentioned equipment is subject to prior sale, and is available immediately.

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PIT & QUARRY PUBLICATIONS
431 S. Dearborn St.
Chicago 5, Illinois

WANTED

1—Crane boom assembly for 362 Marion shovel

1—3 Ft. Symons cone crusher

1—4 Ft. Symons cone crusher

THE NATIONAL LIME AND STONE CO.
Findlay, Ohio

WANTED TO BUY

One used 48x60 Jaw Crusher with feeder. Must be modern and in good condition. Write:

WALKER BROTHERS QUARRIES
Box 699 Thorold, Ontario, Canada

WANTED

USED BATCH TYPE
ASPHALT PLANT
state size, price and location
JOHN B. LAGARDE, INC.
Box 389 Anniston, Alabama

FOR SALE BY OWNER

Haiss Model 27 Bucket Loader-rebuilt
Screen—Universal type "MR" 42"x96". Extra cloth—good shape—ready to go.
Screen—Stephens - Adamson, 4'x6' Heavy Duty. A-1 shape, lots of cloth and ready to ship immediately.
All priced right for quick sale. Located approximately 50 miles from Chicago.

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ATTENTION

READY MIX AND CONCRETE BLOCK COMPANIES

We have 84 acres of sand and gravel located at Remeo, Michigan—28 miles from Detroit. We would like to contact a company that would be interested in a proposition to install a plant on our property and utilize our sand and gravel in their business.

For further information telephone:

Henry Magnuson
Townsend 5-2926 Romeo, Michigan

FOR IMMEDIATE SALE

Lane & Bowler 20-h.p. Deep Well Pump, 15 stg. 140 ft. column. Excellent Condition. 2 Western Precipitation Multicone Dust Collectors. Assorted Magnetic Starters, 5 to 100 h.p. 2 Analytical Balances. 440/220/110 Transformers. MILLER & MEASE, Box 497, LONE PINE, CALIFORNIA.

New **RAILS** Relay
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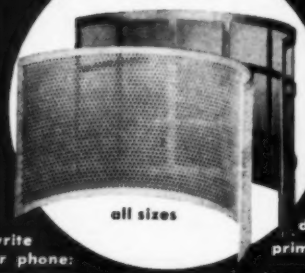
Stocks at Various Points. Quick Service.

CEDARAPIDS 2222 IMPACT CRUSHER with 2 - 50 hp Louis Allis Motors and 440V C-H starters. Like New.

CONTRACTORS MACHINERY COMPANY
302 Dora St. Rogers 6-3196
San Antonio 12, Texas

NOW! CALL STANDARD STAMPING & PERFORATING FOR

HAMMER MILL SCREENS



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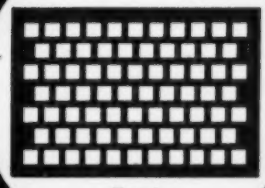
VIBRATING & SHAKING SCREENS



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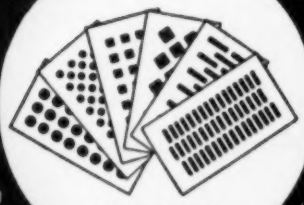
PERFORATED METAL



all metals and all perforations

write or phone: immediate delivery from prime steel on hand

Special High Carbon Steel jobs to order

Standard Stamping & Perforating Co. 3131 W. 49th Place Dept. P Chicago 32, Illinois

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TINNEY DRILLING CO.
for reliable Test Boring

WHEN YOU NEED fast and sure results in test boring for minerals, or diamond core drilling, TINNEY is your best prescription! The limestone field is just one of many industries served by TINNEY.

Full Details on Request

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PLATE FASTENERS FOR CONVEYOR BELTS

Make strong dust-tight, water-tight joints in belts of any width. Special design spreads tension uniformly across belt, allow natural troughing of belt and assures smooth operation over flat, crowned or take-up pulleys. Sizes for belts of from 1/4" to 1 1/2" thickness. *Write for Catalog Sheet.*

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Here is the ANSWER to your MAGNETIC SEPARATOR JOBS!

HOMER *"POWER-PLUS"* MAGNETIC SEPARATORS

PERMANENT non-electric—*Unaffected by HEAT, COLD or MOISTURE*

CAN BE USED INSIDE OR OUTSIDE PLANT

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HOMER MAGNETIC PULLEYS AND PULLEY UNITS—
Available in standard diameters from 12" to 30"; belt widths 4" to 60". Special sizes upon order.

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Available in standard diameters from 12" to 30"; face widths 4" to 60". Can be furnished with or without enclosure.

HOMER MAGNETIC PLATES—
Available in standard widths from 4" to 26"; lengths and number of poles as required. Special fabrications to your specifications.

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THE PERFECT SEAL FOR FEEDING MATERIAL INTO AND OUT OF AIR LINES

- For material conveying or dust collecting systems
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- High and low pressure applications
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Capacities—½ to 40 cubic feet per minute

BLOWER APPLICATION COMPANY

3165 NO. 30TH ST. MILWAUKEE 16, WISCONSIN

FOR RAILROAD AND CONTRACTORS' EQUIPMENT...

CHARLES DREIFUS COMPANY

For Over 65 Years We Have Served the Steel Industry of the World

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WANTED

FOR A LARGE CEMENT COMPANY LOCATED IN EASTERN U.S.A.

Design Draftsman—WITH EXPERIENCE IN STEEL AND REINFORCED CONCRETE. CEMENT PLANT EXPERIENCE DESIRABLE, BUT NOT ESSENTIAL.

Mechanical Engineer—FOR PLANT LAYOUT AND GENERAL DESIGN WORK. MUST HAVE CEMENT PLANT EXPERIENCE.

Mechanical Engineer—FOR MAINTENANCE ENGINEERING DEPARTMENT. MUST HAVE EXPERIENCE IN MAINTENANCE OF EQUIPMENT. CEMENT PLANT EXPERIENCE DESIRABLE. POSITION DEMANDS WIDE EXPERIENCE IN BOTH FIELD AND OFFICE.

Box No. C-38, c/o PIT & QUARRY
431 S. Dearborn St. Chicago, Ill.

Engineer — Wanted

Mid-Western Cement Plant is looking for an engineer experienced in concrete construction to travel as field service engineer. For complete details, Write:

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CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH 20, PA.

FOREMAN WANTED

Take complete charge of operation of Sand & Gravel Plant. Must have experience in Production, Maintenance and Construction. Applicant must furnish references, give age and experience.

ANDERSEN SAND & GRAVEL CO.
Saginaw, Michigan

WANTED
MACHINERY OR PLANT

Including Rotary Kilns, Direct Heat Dryers, Pulverizers, Crushers, Ball Mills, Vibrating Screens, Power Shovels and Cranes, Bucket Elevators, Conveyors, Filters, Diesel Engines.

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JOHN F. MEISSNER ENGINEERS, INC.
Consulting & Designing Engineers

CONVEYOR SYSTEMS
CRUSHING PLANTS
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STORAGE METHODS
SHIP AND RAIL LOADING
REPORTS, SURVEYS

308 W. WASHINGTON, CHICAGO 6, ILLINOIS

QUARRY ENGINEER

Leading company producing sand, limestone aggregate, and concrete needs engineer with minimum of 3 years experience in maintenance and design of machinery used in quarrying operations. Mechanical Engineering degree or equivalent preferred. Age to 38. Unusual opportunity for growth. Permanent. Reply giving personal, education, business background, and salary required.

BOX No. C-39, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

Chief Chemist Wanted

Large Portland Cement mfg. company offers good starting salary. Annual increases with satisfactory service. Application should include full details of background, education, and experience.

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431 S. Dearborn St. Chgo., Ill.

DREDGING WANTED

Have 10" suction—Powered by Cummins 225 HP.
Free estimates on your work.

McHUGH SAND & GRAVEL
Phone 4516 Blue Rapids, Kansas

WANTED

Back Hoe Attachment for LS50 Link Belt ½ yard. Advise location, condition and price.

TITUS, INC.
328 West Avenue A Jerome, Idaho

WANTED

ROD OR BALL MILL, GOOD USED 6' x 12' or 6'-6" x 12", WITH OR WITHOUT DRIVE.

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REPORTS
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ESTIMATES
APPRAISAL

Atherton & Evans
CONSULTING ENGINEERS
POST OFFICE BOX 386
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MATERIALS HANDLING
EQUIPMENT SPECIFICATION
LAYOUT
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Specialized Engineering Services for Lime, Crushed Stone, Sand & Gravel and Other Non-Metallic Industries

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Precision Chemical Analysis of rare and common Minerals & Ores. Carbonate, Phosphate and Silicate Rocks.

H. J. HALLOWELL
Consulting Chemist
323 Main St. Danbury, Conn.

WANTED

Position of Chief Chemist in Cement Manufacturing Plant. Eight years experience. Thirty-one years old.

M. L. McCOIN
20 Lone Star St. Dallas, Texas

QUARRY SUPERINTENDENT WANTED

Experienced man for Sandstone Quarry located in Penna. Quarry equipped with Gang Saws, Derricks, Etc. Write giving full experience, age and salary.

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431 S. Dearborn St. Chicago 5, Ill.

POSITION WANTED
SUPERINTENDENT

16 years Sand & Gravel
8 years Crushed Stone
Large Capacity Plant
Age 43

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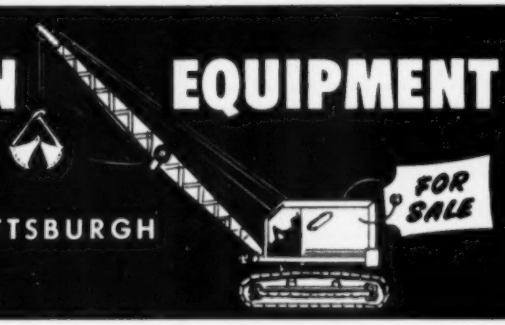
ECA CONSTRUCTION EQUIPMENT

A Bucketful of Bargains!

CHICAGO • PHILADELPHIA • PITTSBURGH



AIR COMPRESSORS, ELECTRIC

360′ Ing. Rand, direct connected 75 HP 3/60/220/440 motor, 24x48″ air receiver, wt. 7050#.

160′ Davey, 100#, 35 HP, 3/60/220, Nat'l. Bd. receiver, V-belt drive, I-beam skids.

100′ Davey, 100#, 20 HP, 3/60/220/440, Nat'l. Bd. air receiver.

WE HAVE AN EXCELLENT SELECTION OF PORTABLE-2-STAGE AIR COMPRESSORS, FROM 60 TO 500 CU. FT. GASOLINE AND DIESEL POWERED, PRICED VERY LOW.

BOILERS

125 HP Erie City Economic, 100#, Nat'l. Bd., horiz.

125 HP Pennsylvania, 125#, Natl. Board, horiz.

115 HP Marion, 151#, horiz.

100 HP Pennsylvania, 125#, ASME, horiz.

80 HP I.B.W., 152#, 60″ dia. x 120″ high, vertical.

40 HP Nagle, 125#, 48x108″, ASME, 1292, vertical.

CAR PULLERS

15 HP Mead Morrison #A-4015, Lincoln motor 220/3/60, 15,000# @ 45 FPM. Excel. condition.

7½ HP Mead Morrison #952, 3/60/220, handle 1 to 5 loaded cars.

CRANES, CRAWLER

No. 3 Northwest Crawler Crane, Ser. 4603, gas powered, 40′ boom.

¾ yd. Mdl. 255A P&H Cranes, Sers. 5750 & 8243, gas engines, 30′ to 40′ booms.

¾ Yd. LS-85 Link Belt, year 1946, Cat. D-4600 Diesel, 40′ boom.

Mdl. 501 Koehring #1071, 60-70-80′ boom, 18′ jib, Mdl. K Wisc. gas eng., cap. 40,000# @ 12′.

This Month's SPECIALS

BIN, 2-COMPARTMENT

Type "V-60" Butler All Steel 2-Compartment Bin, 2 sliding gates on bottom. 9'6" W, 17' L, 22'2" high. Ht. of bin less legs 11'5". A real buy.

DERRICKS

40 ton Stiffleg, 110′ boom, 37'2" mast, 50'5" stiffiegs, 14′ bullwheel. Has handled 20 ton @ 100′ radius w/110′ boom.

30 ton Wiley Mdl. F Stiffleg, 60, 80 or 100′ boom, rated with 60′ boom 30 ton @ 38′, 15 ton @ 57′.

20 ton Terry Steel Erectors Guy Derrick, 115′ mast, 105′ boom, rebuilt.

HOISTS, STEAM

12x12 3 drum Lambert National #15,442-3, rated 20,000# SLP. Wt. approx. 30,000#. Like new, steel gears, 2 clutch winch heads.

11x12 3 drum American #20058, steel gears, 2 clutch winch heads. Wt. approx. 27,000#. Rated 15,000# SLP.

6¼x10 2 drum 9,000# SLP. Wt. 10,000#. American, Clyde, Lidgerwood.

Lambert, 2 drum, w/space for boiler. Size 8¼x10 drums 14x25x7″; size 9x10 drums 14x24x7½″; size 10½x12 one drum 24x34x8″ LP 9,000#, other drum 16x24x11″, LP 13,000#.

WE HAVE AN EXCELLENT SELECTION OF HOISTS — *ELECTRIC, GAS AND STEAM* — 1, 2, and 3 DRUM, TO FIT ANY OF YOUR REQUIREMENTS.

SWINGERS

6¼x8 Clyde throttle reverse independent, wt. 4600#, rated 15,000#.

6½x8 Lambert throttle reverse independent, wt. 3800#, rated 10,000#.

4x5 Size 145 American throttle reverse, wt. 2200#, rated 4,000#.

1½ yd. Lorain Mdl. 77 Diesel Crane, Ser. 9163, D-13000 Cat. engine, 45′ to 85′ boom, 20′ jib.

1½ yd. P&H Mdl. 655-A Diesel Crane or Dragline, Ser. 6426, 80′ boom, 20′ jib, Cat. D-13000 eng., hi gantry.

1½ yd. Mdl. K-3-0 Link Belt, Ser. 1959, Cat. D-13000 Diesel, 80′ boom.

1½ yd. Mdl. 78 Lorain Diesel, Ser. 11281, 150 HP Cat. D-13000 Diesel, 70-100′ boom, jib.

PRICES SHARPLY REDUCED ON ABOVE FOR INVENTORY CLEARANCE.

CRANES, LOCOMOTIVE

30 ton Mdl. F OHIO #3266, 50′ boom, oil fired, Nat'l. Bd. 200# boiler.

75 KW DIESEL AC GENERATOR

75 KW Diesel AC Generator, 220/440/60/3, Cat. D-13000 Diesel eng., complete with all controls and starting eng. Generator completely rewound.

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We have all types — all sizes . . .

12″ Dayton Dowd, vert., 50 HP, 3/60/220/440, 6,000 GPM @ 19′, 4250 GPM @ 32′. Wt. 4110#. Centrifugal.

6″ Carter, self-prime, Hercules gas eng., 1,500 GPM, centrifugal.

Pumps, from 1½″ up to 12″, electric or gas, centrifugal, vertical and horizontal, diaphragm, sludge, steam and sump pumps.

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3—Link Belt Roto Louvre Dryers—#207-10 (2′-7″ x 10′); #502-16 with all stainless steel contact parts; #604-20.

3—3′ x 50′ (or Coolers) made by Bonnot Co., Canton, Ohio.

ROTARY KILNS:

1—8′ x 150′ Vulcan Iron Works, ¾″ shell, complete; 3′ x 50′, 4′ x 20′, 5′ x 40′, 6′ x 60′, 7′ x 45′, 7′ x 55′, 8′ x 72′.

CRUSHERS:

Jaw—2″ x 6″, 6″ x 15″ Sturtevant, 18″ x 36″ and 24″ x 36″ Farrel; 42″ x 48″ Traylor; Rolls: 42″ x 16″ Allis Chalmers Type B; 24″ x 32″ Penna Single Roll. Portable Plants; Cedar Rapids 1036-BBB; 2540-AAAA, 2036-AAA, Also Pioneer with 30″ x 42″ primary and secondary Crushers, all Diesel driven.

PULVERIZERS:

1—5 roll Williams High Side.

6—#1, #0, #00, #000 Raymond Mills.

3—#0, #00, 8″ Raymond Green Mills.

2—#51 Raymond Imp. Mills.

3—Mikro #4TH, #2TH, Bantam SH.

BALL AND TUBE MILLS:

6—Hardinge Mills, 3′ x 8″, 5′ x 22″, 6′ x 22″, 8′ x 48″.

4—Tube Grinding Mills, Made by Traylor, E. & M. Co., Allentown, Pa. Silex Lined, 4′ x 13′, 4′-6″ x 18′-6″, 5′ x 22′ and 5′ x 20′.

8—Pebble Mills, porcelain lined; 3-6′ dia. x 8′, 800 gals. each. 1-6′ x 5′, 3-5′ x 4′, each with ball charge.

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2—Raymond 6′ x 16′ dia.; 1-8′ Gayco; 1-8′ Sturtevant.

LIME HYDRATING PLANT:

1—Complete Lime Hydrating Plant, incl. Kreitzer Hydrator, Raymond Pulverizer, Jeffrey Pulverizer, Hummer Screen, etc.

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RS-2020 (A)—Ingersoll-Rand Mdl. IKA-315 Portable Air Compressor mounted on 4 pneumatic wheels.
Sale Price FOB Louisville, Ky.....$6,300.00

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RS-1743 (B)—Ingersoll-Rand Mdl. IKA-315 Portable Air Compressor or 4 pneumatic tired wheels. Powered by International UD-18A diesel engine.
Sale Price FOB Louisville, Ky.....$5,250.00

S-2419 (B)—Ingersoll-Rand Mdl. K-500, 2 stage, Portable Air Compressor on 4-7.50x20 pneu. tired wheels, powered by Waukesha 4¼x6½ diesel engine. Good condition.
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RS-2320 (A)—Ingersoll-Rand Mdl. DR-600 Portable Air Compressor on 4 pneumatic tired wheels, powered by GM Mdl. 6-71 diesel engine, equipped for out-of-level operation w/deep oil pan and stabilizer cables.
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Shovels—Cranes—Draglines

S-444 (C)—P & H Mdl. 255 (A) ¾ cu. yd. Shovel, 18′0″ boom, 13′6″ turn dipper handle, chain crowd, tractor type crawler mounting w/20″ pads, 11′1″ O.A. length, 9′10″ O.A. width. Powered by Waukesha Mdl. MZA 86 HP 6 cyl. gasoline engine, size 4¼x4¾ 404 cu. in. displacement.
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1600 hp Fairbanks-Morse diesel 38-D-8-⅛—Complete dredge pump 20″ suction, 18″ discharge. International tractors T.D. 18 & T.D. 9.

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Jaw crushers 48 x 60—42 x 48—36 x 48—30 x 42—24 x 36 others. Roll crushers—rod mills—ball mills—hammer mills—gravel plants.

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LOCOMOTIVES: 2—65 ton, diesel electric, standard gauge, 0-4-4-0, in guaranteed condition. For sale or rent.

LOCOMOTIVE CRANE: Link Belt 25 ton, standard railroad gauge, gasoline powered, air brakes, cast steel trucks, bucket handling, with or without 1¼ yd. clam shell bucket. For sale or rent. Located Minnesota.

CAR DUMPER: Link Belt, will dump standard R.R. gondola cars up to 90 tons capacity, transfer table 54 ft. Specifications and photos available.

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MINE HOISTS: Single and double drum 100 to 1500 H.P. with all electrical equipment. Complete specifications, drawings and photos available.

MINE HOIST SPECIAL: Nordberg 1200 H.P., 1400 FPM, one drum clutched, wraps 1100 ft. 1¾″ rope, complete with motor and all auxiliary equipment.

CLASSIFIERS: 4—Akins 54″ x 34 ft. with lifting device, 220/440 volt motors. 2—Wemco 78″ Simplex single screw, double pitch, 28½ ft. tank, 220/440 volt motors. All in condition like NEW. 1—Wemco Duplex size 72″ x 32 ft., type SH, pitch double and variable, with lifting device, 220/440 volt motor. NEW and UNUSED. Three located Nevada.

PULVERIZERS: 1—Hardinge 10′ x 36″, one 10′ x 48″ and one 5′ x 22″ Conical Ball Mills, complete with motors, drives and auxiliary equipment for dry grinding. 1—NEW 9′6″ x 11 ft. Ball Mill with or without NEW 700 H.P. synchronous motor, 180 RPM, 3 phase, 60 cycle, complete with incher control. NEW, UNUSED. 1—8′ x 12′ Marcy Mill.

JAW CRUSHERS: 48 x 60; 42 x 48″; 24 x 36″.

BATCH & MIXING PLANTS: One with 55 yd. cap., 2 yd. mixer, etc. One 200 ton with one or two Koehring 2 yd. mixers. Both plants complete with all auxiliary equipment. Photos and drawings available.

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MACK TEN WHEEL TRUCKS JAEGER–REX–TRUCK MIXERS

ALL AVAILABLE IMMEDIATE DELIVERY

Mixer				Truck				
Year	Make	Model	Ser. No.	Year	Make	Model	Ser. No.	Selling Price
1950	Jaeger	4½HMTL	J12118	1947	Mack	LFSW	LF2D-1099	$ 5,750
1951	Jaeger	4½HMC	J14344	1947	Mack	LFSW	LF2D-1127	6,250
1952	Jaeger	5½TC	J13350	1947	Mack	LFSW	LF2D-1233	6,300
1947	Jaeger	5½HMB	None	1942	White	——	251085	3,050
——	Rex	5½ yd.	TNN-288	1942	White	——	261134	3,500
1950	Jaeger	5½TC	J11633	1950	Mack	LJSW	LJ2D-2880	9,450
1950	Jaeger	5½TC	J11632	1950	Mack	LJSW	LF2D-2885	9,450
1950	Jaeger	5½TC	J11630	1950	Mack	LJSW	LJ2D-2883	9,450
1951	Jaeger	5½HMC	J12723	1950	Mack	LJSW	LJ2D-2882	9,450
1950	Jaeger	5½TC	J11634	1950	Mack	LJSW	LJ2D-2879	9,450
1952	Jaeger	5½TC	J13349	1950	Mack	LJSW	LJ2D-2881	9,750
1950	Jaeger	5½TC	J11635	1950	Mack	LJSW	LJ2D-2888	9,450
1947	Rex	4½ yd.	TH302	1950	Mack	LJSW	LJ2D-2886	8,750
1950	Jaeger	5½TC	J11629	1950	Mack	LJSW	LJ2D-2887	9,450
1947	Rex	5½ yd.	TNN-360	1952	Mack	LFSW	LF2D-2553	8,950
1952	Jaeger	5½TC	J13347	1952	Mack	LFSW	LF2D-2557	9,750
1952	Ransom	5½ yd.	52932	1952	Mack	LFSW	LF2D-2555	9,250
1952	Jaeger	5½TC	J11631	1952	Mack	LFSW	LF2D-2556	9,450
1952	Jaeger	5½TC	J13355	1952	Mack	LJSWX	LJ2DX-4884	12,900
1952	Jaeger	8TC	J13341	1952	Mack	LMSW	LM2DX-2906	16,500
1947	Rex	4½ yd.	TR-473	1947	Mack	LFSW	LF2D-1116	5,800
——	Rex	4½ yd.	None	1947	Mack	LFSW	LF2D-1117	5,800
1952	Ransom	3 yd.	None	1945	Fed.	——	None	3,500
1944	BlawKnox	4 yd.	None	1944	White	——	251363	3,500
1944	BlawKnox	4 yd.	None	1944	White	——	None	3,500
1944	BlawKnox	4 yd.	None	1944	White	——	251867	3,500
1947	Rex	5 yd.	None	1944	White	——	250731	3,500
1944	Jaeger	4 yd.	None	1944	White	——	251783	3,500
1944	Jaeger	4 yd.	None	1944	White	——	None	3,500
1944	Jaeger	4 yd.	None	1944	White	——	256987	3,500
1952	Jaeger	5½TC	J13353	1950	Mack	LJSW	LJ2D-2884	9,450
1952	Jaeger	5½TC	J11628	1952	Mack	LFSW	LF2D-2554	9,450
1952	Jaeger	5½TC	J11626					2,750
1947	Rex	5½ yd.	TNN-407					1,250
1952	Jaeger	4½HMC	J14345					3,450
1947	Jaeger	4½HMB	None					1,500
1946	Jaeger	4½HMB	None					1,500
1947	Rex	4½	TR286					950
1947	Rex	4½	TR288					950
1946	Jaeger	5TC	None					450
1951	Ransom	5½	52355					2,750
1947	Jaeger	5½	J11014					1,750
6 1952	Jaeger	6½HMC						3,750
6 1949	Jaeger	4½HMB						2,500
3 1950	Ransom	5½Hi-Dump						2,500

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Terms can be arranged with responsible purchasers.
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1—9'x80' Allis Chalmers ⅝" shell.
1—8'x125' Vulcan ⅜" shell.
2—7'x160' Reeves ⅜" shell.
2—7'x120' Reeves ⅜" shell.
1—7'x60' Reeves ⅜" shell.
1—7'x45' Link Belt ¼" shell.
1—7'x20' Link Belt Roto-Louvre.
6—6'x25', 6'x30', 6'x40' steam tube.
1—5'x67' Reeves 5/16" shell.
1—5'x60' Vulcan ⅜" shell.
1—4'6"x50' Vulcan ⅜" shell.
1—5'x40' Cummer ⅜" shell.
1—4'6"x30' Louisville ⅜" shell.
2—4'x20' Cummer 5/16" shell.
2—3'10"x16' Link Belt, Roto-Louvre.
1—2'7"x8' Link Belt, Roto-Louvre.

PULVERIZERS — MILLS

3—Raymond High Side Mills, 3, 4, 5 Roll.
2—#40, #60 Raymond 1MP Mills.
2—#412, #512 Raymond Bowl Mills.
2—Raymond #1 Pulverizers with 6' double whizzer separators.
2—Williams 4 & 5 Roll High Side Mills.
4—Hardinge 4½'x16", 5'x22", 6'x22", 6'x48", 10'x48".
1—Patterson 6'x8' Ball Mills.
2—Abbe 5'x8'6", 5'x22' silex-lined Tube Mills.

CRUSHERS

1—Symons 4' short head Cone Crusher.
1—Traylor 56"x24" Crushing Rolls.
1—Allis Chalmers 36"x48" Jaw Crusher.
10—Jaw Crushers, 5"x6" to 24"x36".
1—McCully 10" Gyratory.

SCREENS — SEPARATORS

6—Tyler Hummer Screens, 3'x5', 4'x5', 4'x7', 4'x10', 5'x10', 4'x15'.
1—Seco 4'x10' double deck Screen.
5—Rotex 40"x84", 40"x120".
3—Air Separators, 6', 8', 10', 14'.

MISCELLANEOUS

1—Hardinge 6'x14' Classifier.
2—Oliver Rotary Dewaterers 8'x4'.
1—Complete Lime Hydrating Plant.
12—Bucket Elevators 20' to 90' centers.
5—Belt Conveyors 24" to 36".
2—Akins 54"x14', 2'x15' Classifiers.

FINAL LIQUIDATION

Lime & Hydrate Plants

Must Be Moved Within 30 Days

Milltown, Indiana

1—Vulcan 8'x125' Rotary Kiln with 50 HP motor.
1—Raymond #402 Bowl Mill, 40 HP motor.
1—Link Belt 7'x45' Rotary Kiln.
1—Vulcan 4½'x50' Rotary Dryer.
1—Sturtevant Laboratory Roll Crusher 5" x 8".
1—Raymond #1 Pulverizers complete with 5'6" dia. Raymond double whizzer separators, piping, cyclones, fans.
2—Raymond 5 & 3 Roll High Side Mills with separators, piping, fans and motors.
1—Seco 4'x10' double deck Screen.
1—450 Ton Steel Hopper 22'x24'6" with 12'8" cone on structural steel legs.
2—Clyde #3 Hydrators, motor driven.
1—Apron Feeder 42"x10', 10 HP motor.
1—Apron Feeder 18"x11'6", 5 HP motor.
1—Continuous Bucket Elevator 64'6" centers, 24"x12"x18" buckets, 15 HP motor.
1—Continuous Inclined Bucket Elevator, 67' centers, 42"x18"x25" buckets, 60 HP motor.
1—Troughing Idler Conveyor 18"x65' with motor drive.
1—Link Belt Drag Conveyor 49'8" centers, 5 HP motor.
4—Bucket Elevators 20' to 31' centers with 6"x4" to 8"x6" buckets.
3—Bucket Elevators 35' to 42' centers 12"x6" buckets, 5 HP drives.
4—Bucket Elevators 60' to 70' centers, 12"x6" buckets, 5 HP drives.
300' of 9" and 12" Screw Conveyor with drives and motors.
2—Allis Chalmers 2'x6' Vibro Screens.
1—Allis Chalmers 3"x2" Centrifugal Pump, motor driven.
1—Ingersoll Rand Type XB, 12"x12"x7½" x12" Air Compressor, 60 HP motor with air receiver.
3—250 KVA Allis Chalmers Transformers, 2300 volt primary with taps, 460/230 volt secondary, 60 cycle.
2—G.E. Pyranol Capacitors, 180 KVA and 120 KVA, 460 volt 3 phase.

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1000 HP MOTORS RANGING FROM 3 to 125 HP, all 3/60/220/440 volts; SPARE PARTS; STRUCTURAL STEEL; FLOOR PLATES, ELECTRIC CABLE; 8 and 12 TON CHAIN HOISTS; 10,000 GAL. STORAGE TANK; 5½' dia. by 60' high STEEL STACK, PORTABLE BELT CARLOADER; CAR PULLER.

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Approx. ft. per lb. 290

Size	1 Lb. Spools	5 Lb. Spools
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Sand and Gravel plant in Western Oklahoma—8" Amsco pump—Twin GM Diesels—½-yd. Insley dragline—Telsmith rotary screen plant—other equipment. Only coarse aggregate plant in northwestern Oklahoma. Have excellent contract to furnish all concrete aggregate on $1,000,000 bridge just started close by—U. S. Air Force announced Feb. 9th a $30,000,000 base in shipping distance, construction to start by next July 1st. Also, a new 4-lane State highway to be built within 50 miles. 40-acre lease, cheap royalty. Am in my 64th year and health failing. Cash deal only.

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Explosion Proof Motor Headquarters

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Portable washing, screening & crushing plant complete including Gorman-Rupp 6" pump, UD14A International Power Unit, 24" x 18' Eagle Sand Screw, 3' x 10' Triple Deck Simplicity Vibrating Screen, 10 x 16 Universal Jaw Crusher, 175' 18" Conveyor & Belting. Plant used one season. Phone or write:

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1036/2418 Cedarapids Jr. Tandem on rubber.
Cedarapids Rock-It plant w/2025 jaw, 3033 hammermill.
2020 Cedarapids double impeller, rebuilt.
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60-ton, 2-comp., 8'x18' storage bin w/clam gates.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also belt 24" thru 30" face magnetic pulley.

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3-40" Memco lifting magnet, used 2 months.

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500 cu. ft. Gardner-Denver diesel, rebuilt.
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1—Brookville—24" Ga.—Gas 23042.
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1—Whitcomb 30 Ton S.G. Diesel 240154—almost new.
2—G.E. 44 Ton Heavy Duty Diesel Electric.
1—Whitcomb 65 Ton Diesel Electric. New 1944.

2—BROOKVILLE 12 TON S.G. DIESEL—NEW—BARGAINS. 22683-4.

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15—Western 30 Yd. Air Dump—Lift Doors.
21—15 Ton Hopper 36" Ga.
2—Unusually nice 50 Ton Twin Hoppers Cross Dump.

MISCELLANEOUS

2—Conway 75 Muckers—2256 & 305. Large Number New Repair Parts. Very Cheap.
Bridgeford Axle Lathe.
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Mundy 2 Drum Elec. Hoist—300 H.P.
Browning 25 Ton Revolving Gantry, 230 D.C.
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Orton 15 Ton Diesel Loco. Crane—242852.

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25 X 40 JAW, 10 X 36 JAW, 40 X 24 ROLLS.
3-BIN SCREENING OUTFIT. DELIVERY CONVEYORS. HAMMER MILL MODEL 2033 FOR ASPHALT DUST.
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Belt Width	Length of Conveyor	List Price	Sale Price
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18"	45'	1839	960
18"	50'	2054	1043
18"	85'	3209	1581
24"	25'	1322	739
24"	45'	2062	1085
24"	60'	2617	1355
24"	100'	4097	2037
30"	25'	1421	806
30"	65'	3101	1617
30"	80'	3731	2295

Other lengths & belt widths at bargain prices.

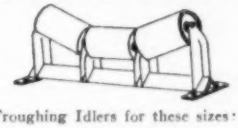
CONVEYOR BELTING

New heavy duty rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For boxes, bags & bulk materials. Troughs easily. Belt is 4 ply, 28 oz. duck carcass, 1/8" top cover, 1/32" bottom cover. Famous brands at deep cut prices. Fresh stock.

WIDTH	PRICE
18"	$2.50/ft.
24"	3.23/ft.
30"	3.97/ft.

ADDITIONAL WIDTHS & PLIES AVAILABLE AT LOW PRICES. WRITE FOR FREE SAMPLE.

TROUGHING IDLERS & RETURN ROLLS



3-roll Troughing Idlers for these sizes:

16" belt	$17.25	30" belt	$19.50
18" belt	18.00	36" belt	20.25
24" belt	18.75	48" belt	21.25

1-roll Return Idlers for these sizes:

16" belt	$6.75	30" belt	$8.25
18" Belt	7.13	36" belt	8.75
24" belt	7.50	48" belt	10.25

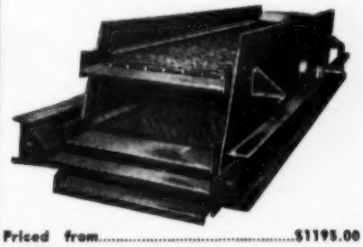
All steel. Interchangeable with other well-known makes. Replaceable ball bearings. Rust prof ball races; maintenance is negligible.

HEAD AND TAKEUP PULLEYS

All welded steel head and tail pulleys and assemblies complete.
Priced from **$60.00**

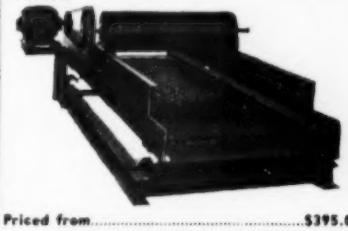
VIBRATING SCREENS

For sizing & separation of Rock, Sand, Gravel, Slag, Coal and many other uses. Shaft is mounted on self-aligning bearings & made in heavy duty eccentric shaft types; 1 to 5 decks, 3'x8' to 5'x14'.



Priced from **$1195.00**

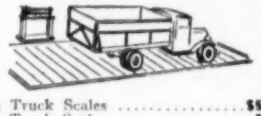
Bonded General Purpose Screens are ideal & economical for medium operations. Sizes to 3'x8' in 1 to 3 decks. Wire cloth or plate included.



Priced from **$395.00**

MOTOR TRUCK SCALES

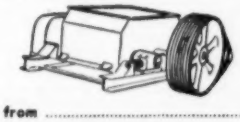
For stationary and portable applications. Scales have steel lever system complete with structural steel weighbridge. Capacities to 50 tons. Recording beams available.



20 Ton Truck Scales	$525.00
26 Ton Truck Scales	582.00
33 Ton Truck Scales	825.00

CINDER, PUMICE, PERLITE CRUSHERS

Bonded double roll crushers are available with Smooth, Fine or Coarse Corrugated rolls or any combination of same for crushing Lightweight Aggregate, Pumice, Perlite, Chemicals and similar material. Capacities to 100 tons per hour. Steel hoppers included.



Priced from **$479.00**

SPEED REDUCERS

Bonded offers speed reducers for fractional to 60 H.P. motors in a variety of ratios.
Priced from **$32.00**

BUILD YOUR OWN CONVEYOR

Ready-Made Head, Tail and Intermediate Conveyor Sections
All Types Idlers, Return Rolls and Belting in Stock

Holdback	Head & Tail	Roll Idler	Self-Aligning Idler	Guide Idler	Wing Pulley
$90.00	$171.00	$6.38	$56.50	$13.75	$74.00

You are welcome to visit the Bonded plant at any time. Discuss without obligation, your requirements with our engineers or Write for Catalog and Prices.

BONDED SCALE & MACHINE CO.

Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders
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46—KOPPEL, 1½ YD., 24 & 30 & 36 & 42 IN. GA. V SHAPED.
115-2 YD., 3 YD., 4 YD., 36 IN. GA.
60—STD. GA. 12 YD., 16 YD., 20 YD. & 30 YD. CAP.
6—10 TON PHOENIX QUARRY CARS—STD. GA.

GRINDING MILLS

HARDINGE, 5'x 22", 6'x 22", 8'x 22", 10'x36" & 10'x 48".
BALL MILLS, 5x4, 6x6, 6x12, 7x6 & 9½x11.
ROD MILLS, 3x10, 4x7 & 5x16.
TUBE MILLS, 5x18, 5x22, 5½x20 & 6x22.

PULVERIZERS

HERCULES JUNIOR 3 ROLL MILL.
1 & 3 RAYMOND AUTOMATIC.
B&W AND RILEY COAL PULVERIZERS.
#47 RAYMOND IMP. MILL.
35" RAYMOND VERTICAL MILL.
WILLIAMS GNOME ROLLER MILL.

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5', 2', 16' & 16' AIR SEPARATORS.
6' x 14' HARDINGE COUNTER CURRENT.
DINGS MAGNETIC TYPE IR 3 STAGE 60".
DORR 40' DIA. x 20'—3 TRAY, 4 COMP. THICKENER.
STANDARD THICKENERS—12' TO 60' DIA.
RAKE & BOWL CLASSIFIERS, 2x15 88FR, 6x22 DSF, 3x25x10 TURRET BOWL.
SPIRAL: 48"x19' & 54"x30' SIMPLEX & 60"x42' DUPLEX.

HAMMER MILLS

JEFFREY 36"x24" B-2 & 42"x36" Flextooth.
WILLIAMS E20 GA. & #4, 5 & 7 JUMBOS.
CEDAR RAPIDS 2033, 3033 & 4033.
GRUENDLER 2XB, 5XD & 3XD & 6XD REVERSIBLES.
PENNSYLVANIA: C-4-30, 8XC-15-58, 8XT-11 & 13.

ROTARY DRYERS & KILNS

DOUBLE SHELL: 60"x35' & 90"x60'.
SINGLE SHELL: 6'x20, 6'x40', 6'x60' & 6'x80'.
KILNS: 6'x60', 6'x80', 8'x125', & 10'x125'.

BLAST HOLE & WELL DRILLS

LOOMIS 44, KEYSTONE 51 & 71.
10—IR—FM2—WAGON DRILLS.
1—BUCYRUS ERIE 29T ELECTRIC.

CRUSHERS

16"x60" Fairmount.
42x48 TRAYLOR JAW.
24x36 FARREL 15B.
24x36 BUCHANAN SECTIONAL JAW.
30x42 BUCHANAN SECTIONAL JAW.
18x36 FARREL B JAW.
15x36 FARREL B STAT. PLANT.
$636 HYDROCONE A. CHAL. GYRAT.
36" TRAYLOR TY GYRAT.
24x36 DIAMOND PRIMARY PORTABLE DIESEL.
10x36 DIAMOND PORTABLE SECONDARY.
10x36 AUSTIN WEST. SECONDARY.
$980 UNIVERSAL JR. GRAVELMASTER.
$880 UNIVERSAL SR. GRAVELMASTER.
TELSMITH PORT. 8x32—28" GYRAT.
22x36 CEDAR RAPIDS PORT. PRIMARY WITH DIESEL.
CEDAR RAPIDS PRIM. & SECON. 16x24 JAW 18x24 ROLL COMPLETE.
PIONEER 56A 30x42 JAW 54VA, 54x24 ROLL.
PIONEER 300 WA CRUSHER-WASHER-SCREEN-6x20.

JAW CRUSHERS

BLAKE TYPE—40x60, 42x48, 24x36, 18x36, 13x30, 12x24, 12x16.
SINGLE SHAFT—18x36, 15x36, 15x30, 10x40, 10x30, 10x20.
CAM & ROLLER—24x40, 14x26, 11x26, 10x20, 6x20.

GYRATORY FINE REDUCTION CRUSHERS

NEWHOUSE 7", 10", 14"—KENNEDY 19S, 25S, 37—SUP. McC. 6" & 10" AL. CHAL. 322R, 222R 536R—TRAYLOR TY 36".

GYRATORY STD. REDUCTION CRUSHERS

6", 10", 14" & 20" SUP. McC.—GATES AL. CHAL. 3, 4, 5, 6, 7½, 8, 9, 12.
PARTS FOR 42" SUPERIOR McCULLY.

STEEL DERRICKS

GUY: 8 TON 85 FT. BOOM, 25 TON 60 FT. BOOM, 15 TON 100 FT. BOOM, 20 TON 115 FT. BOOM, 50 TON 100 FT. BOOM.
STIFF LEG: 5 TON 70 FT. BOOM, 15 TON, 100 FT. BOOM, 25 TON 100 FT. BOOM, 75 TON 135 FT. BOOM.

ASPHALT & OIL TANKS

15—8,500, 10,000 & 20,000 GAL. CAP. WITH COILS. —6—10,000 GAL. R.R.

SCREENS

VIBRATING: 3x6, 3x8, 3x5, 4x8, 4x10, 4x12 & 5x12 HUMMER, NIAGARA & ROBINS, LINK BELT.

LOCOMOTIVES

5—45 Ton G.E. Diesel Elec.
1—20 TON WHITCOMB GAS.
1—10 TON DAVENPORT GAS.
1—20 TON G.E. DIESEL ELEC.

AIR COMPRESSORS

420 FT. WORTHINGTON BELTED.
676 FT. WORTHINGTON ELECTRIC.
1098 FT. INGERSOLL RAND, ELEC.
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CLYDE HYDRATOR WITH KUNTZ CONTINUOUS DUSTLESS SYSTEM, 4-5 T.P.H.
#1 RAYMOND AUTO PULVERIZER WITH SEPARATOR & CYCLONE.
36x24 JEFFREY B. HAMMER MILL.
3 ROLL BRADLEY HERCULES JR. PULVERIZER

10 SURPLUS NEW MERRICK WEIGHTOMETERS

FOR 18" - 24" - 30" - 36" & 42".

COMPLETE PLANTS BOUGHT

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60 E. 42nd St. New York 17, N.Y.

DEPENDABLE USED MACHINES

Special—Morris 10" manganese gravel pump, never installed or used. Sacrifice price.

Bay City 1¼ yd. dragline	Cedar Rapids 40x20 roll crusher	3 yd. Dumpcrete
Bay City ⅜ yd. dragline	Chrysler 8-cyl. power unit	Butler fork truck
Lorain ½ yd. dragline	Diamond 9x18 roller bearing crusher	Pioneer 4x8 screen
Univ. 9x36 crusher	Simplicity 2x6 single deck screen	⅜ yd. clam bucket
RD-7 bulldozer	45 ton, 3-comp., portable steel bin	¾ yd. dragline bucket

These machines reconditioned in our newly-built daylight plant. Come see them!

10004 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Ill.

FULL FACTS, 8" x 10" PHOTOS AIRMAILED ON REQUEST, CALL LOUISVILLE—WABASH 6803

EQUIPMENT BUYS

D13000Y DIESEL ENGINE—CATERPILLAR. Ser. 2S84422. A 6 cylinder unit which develops 145 maximum horsepower at 1000 RPM. Equipped with open type clutch arrangement. Mounted on extended steel channel base. Has pillow blocks and outboard bearing, radiator and fuel tank. Has had new pistons, liners and rod bearings installed and is in first-class condition. f.o.b. Louisville, Ky. $2,950.00

D8800Y DIESEL ENGINE CATERPILLAR. Ser. 2J2575. A 4 cylinder unit which develops 80 horsepower at 850 RPM. This is the open type clutch arrangement with the extended shaft, outboard bearing and pillow blocks. Mounted on steel channel base. Complete with radiator, fuel tank and hook. Completely reworked in Louisville, Ky.
f.o.b. Louisville, Ky. $2,250.00

COMBINATION CLAM, CRANE AND DRAGLINE—THEW LORAIN L 50S, Ser. 22846. This 1 yd. machine is powered by a Caterpillar D318 engine and mounted on 14 ft. crawlers. Equipment includes 40 ft. boom and complete crane, clamshell and drag attachments. New in April 1952, and has had only about 30 days service. Hourmeter reads 563. Like new in every respect. Replacement value is about $29,500.00.
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800 W. MAIN ST.—LOUISVILLE, KY.
ASHLAND, KY. • BOWLING GREEN, KY.
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- 1—16" Telsmith Gyratory Crusher
- 1—14 x 26 Acme Jaw Crusher
- 1—12 x 24 Buchannan Jaw Crusher
- 1—10 x 36 Buchannan Jaw Crusher
- 1—18 x 30 Farrell Jaw Crusher
- 1—18 x 36 Farrell Jaw Crusher
- 1—15 - 40 Good Roads Ball Bearing Jaw Crusher
- 1—10 - 30 Good Roads Ball Bearing Jaw Crusher
- 1—10 - 20 Austin-Western Ball Bearing Jaw Crusher
- 1—9 - 21 Telsmith Ball Bearing Jaw Crusher
- 1—18 - 30 Telsmith Roll
- 1—18 - 30 Cedar Rapids Roll
- 1—#40 Telsmith Gyratory Reduction Crusher
- 1—#32 Telsmith Gyratory Reduction Crusher
- 1—6" Allis Chalmers Reduction Crusher
- 1—5' x 12' Double Deck Telsmith Screen
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BLUE BALL MACHINE WORKS
Blue Ball, Pennsylvania

POWER UNIT FOR SALE

Minneapolis-Moline 4 cyl. Model 403-4A. Factory equipped for L.P. Gas. Complete with Starter, Generator, Clutch Hood, Water Manifold and safety equipment. 75 H.P. Brand New, never used. $1500. F.O.B. Dixon, Ill.

C. W. WOESSNER
Dixon, Ill.

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CRUSHERS

Telsmith Reduction Crusher—Gyratory Size 32. Complete with oil pump and tank, drive shafts and flywheel	$2000.00
Cedar Rapids 3" x 36" Jaw #336—Serial 2191	1000.00
Austin Crusher Gyratory—type 103 Shop 3663	1000.00

SCREENS

Deister Flat-O Vibrating Screen 2 deck 3' x 6' 435 Type 236	750.00
Deister Flat-O Vibrating Screen 3 deck 3' x 6' 424 Type 336	915.00
Simplicity Vibrating Screen 3 deck 3' x 8' 3388VM687	1100.00
Simplicity Vibrating Screen 4 deck 4' x 10' 4-410-VM-187	2500.00
Telsmith Heavy Duty Washer Screen 30" diameter, 30" x 55" scrubber barrel—30" x 72" double screen barrel	800.00
Telsmith 60" Ajax Gravel Washer—60" x 96" inside screen drum, 96" x 96" outside screen drum—total length 13'	2500.00
Good Roads Vibrating Screen 3 deck 3' x 6'	600.00

SAND SCREW

Smith Engineering Works, Size 28 x 12..	700.00

SAND SETTLING TANKS

Telsmith Size 5	230.00
Telsmith Size 6	290.00
Telsmith Size 8	375.00

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Hoist Class E2H Serial 1157 Shop 8748 G.E. Motor 104 h.p. 860 r.p.m. Mast—110' with foot socket. All guy cable thimbles and dead man sheaves. 800' of used 1⅛" track cable. Includes Saurman 2 yd. cableway drag. One new bottom for same.. 4000.00

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HOIST

The Patten Hoist 624 Type 8V85—load capacity 500 lbs. cable speed 350 f.p.m.	500.00

All items subject to prior sale.

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FOR SALE

1—Vulcan Rotary Kiln, 7' x 120'.
1—Link-Belt Steel Roto Louvre Dryer Size 7½' x 20'.

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FOR SALE

SCREEN
4 x 8' Telsmith Pulsator 4 deck

CRUSHER
15 x 40 Champion Roller Bearing Jaw Crusher

BOOM
75' Dragline Boom for 80D Northwest with 2½ yard bucket and fairlead

ENGINE UNIT
Murphy Diesel MD-6 complete 135 HP.

G. & W. H. CORSON, INC.
Plymouth Meeting, Pa.

JAW CRUSHERS — 6" x 3" to 60" x 48"

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FARREL-BACON JAW CRUSHERS
it will pay you to consult

BACON-PIETSCH Co., Inc.
Engineers & Manufacturers Send for Catalogue
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Conveyors, Screens, etc.

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TOLEDO SCALE. Model 63-7743, 60000 lb. capacity, 34 x 10 foot platform with unit weight printer, never been used, substantial discount.

24 foot Enclosed Cup Conveyor in perfect condition.

Cedar Rapids 10 yard Portable Bin with U2 motor and conveyor.

304 Koehring ¾ yard Power shovel.

UD18 International Diesel — not used since complete overhaul—new crankshaft, pistons and sleeves.

Lippman Jaw Crusher 24 x 36 Perfect condition — Mounted on chassis except wheels with a new 36 x 12 foot Pioneer Apron Feeder with discharge Conveyor. Plant powered by Cat. D 4600.

Portable Cedar Rapids 40 x 33 Hammermill Plant powered by GM twin diesel. Plant perfect for producing chips road rock, or any grade stone—Will sacrifice.

2—40 ton Lippman Steel Bins.

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Profitable rock crushing and agricultural lime business in Kansas City, Missouri area, for sale, due to owner's health.

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FOR SALE

Grand Rapids Portable Jaw Crusher 20 x 32 with Electric Motor.

All Steel Conveyor for 24" Belt, 120' long, more or less, covered with Galvanized roofing.

Kennedy Screens, with Electric Motors for each screen, one 3' x 10', one 3' x 15'.

Acme Crusher 14 x 26.

NATIONAL SLAG COMPANY
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FOR SALE

1-R 315 cfm Compressor, 18-A International Diesel Engine, pneumatic tire mounting. Operated only 1519 hours.

1-R Wagon Drill FM-3 with X-71 WD Drifter Drill. Pneumatic tire mounting.

Shovel Front to fit Lorain 80, 82, 87 and 95. 31 ft. Torsional Boom; 27 ft. tubular stick; 2 yd. Amsco Dipper.

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Haiss Bucket Loader

Model 75 W Ser. #283

Mounted on rubber tires

Le Roi gasoline motor Ser. #23539 $3,750.00

In good working condition.

ROLL CRUSHER

40x22 Austin-Western double roll crusher, roller bearing with two new plain roll shells—Ser. #402283.

Like new, late model—$4,500.00.

JAW CRUSHER AND FEEDER

20"x36" Cedar Rapids Jaw Crusher, roller bearings.

36"x8' Cedar Rapids Apron Feeder.

Very good used condition—$6,000.00

POWER EQUIPMENT COMPANY
CRUSHER & CONVEYOR DIVISION
KNOXVILLE 15, TENNESSEE

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18"x130' b.b. conveyor with belt

16"x132' c. pl. b. conveyor with belt

14"x78' c. pl. b. conveyor with belt

24"x50' c. pl. b. conveyor with belt

24"x30' c. 5 roll idlers, new belt

20"x31' c. 5 roll idlers, new belt

30"x155' c. 5 roll idlers, 5 ply belt

36"x112' c. 5 roll idlers, new belt

46-42" r.b. trough idlers, channels

Super cap. elevator 20"x75'—6 mos. old enclosed

10"x60' encl. spaced elevator, motor 355' new 14"x6' ply elevator belt

9"x54' screw conveyor, motor and reducer

9"x11' screw conveyor

Cement elevator 70' ctrs. with 8" bucket

Good Roads #1030 r.b. crusher

8x12 Hercules-Blake type jaw crusher

20" Putnam lathe 12' bed, 3 chucks

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136 Colt Street, Irvington 11, N. J.

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GUARANTEED MOTORS
M.G. SETS • GENERATORS

Hoists • Compressors • Transformers
Units of Every Size and Description

SLIP RING
MOTORS

3 Phase, 60 Cycle, 220 or 440 Volts (*2300 volts, or higher)

HP	Make	Type	Speed
2000	*Gen. Elec.	MT-12	600
1500	*Gen. Elec.	MT-30	240
1250	*Westg.	CW	600
1000	*Westg.	CW	250
800	Al. Chal.	ANY	600
700	*Al. Chal.	ANY	720
600	*Gen. Elec.	MT-422	600
500	*Al. Chal.	ANY	600
500	Westg.	CW	350
400	Al. Chal.	3-brg.	450
400	*Gen. Elec.	MT-412	450
300	*Gen. Elec.	IE-15A	1800
300	*Gen. Elec.	MT-410	450
250	Westg.	HF-15H	600
200	*Westg.	CW	1200
200	Gen. Elec.	IM	600
150	Cr. Wh.	50-R	1800
150	Gen. Elec.	MT-549	1800
150	Westg.	CW-7720	1200
125	*Gen. Elec.	MT-549Y	1800
125	Gen. Elec.	IM-15A	600
100	Gen. Elec.	IT-13A	1800
100	Al. Chal.	ANY	900
100	Gen. Elec.	IM	450
75	Nor. Wes.	HW-50	1800
75	Gen. Elec.	MT-347	1200
75	Gen. Elec.	IM	1200
75	Al. Chal.	ANY	900
75	Gen. Elec.	IM	600
75	Westg.	CI-756A	600
60	*Westg.	CW-762A	900
50	*Al. Chal.	ARY-220-BS	1800
50	Gen. Elec.	IM	1800
50	*Al. Chal.	ARY	1200
50	Westg.	CW-636A	1200
50	Gen. Elec.	MT-336	900
50	Al. Chal.	ANY-26F	600
40	*Gen. Elec.	MT-532	1200
40	Gen. Elec.	MT-336	1200
40	Gen. Elec.	MT-336	900
35	Fr Morse	UAB	1800
35	Gen. Elec.	IM	1200
35	Gen. Elec.	MTC-5536	600
30	Gen. Elec.	MT-326	1200
30	Gen. Elec.	MT-532	900
25	Gen. Elec.	IM	1200
25	Al. Chal.	ARY-220	900
25	Westg.	CW-586C	900
25	Gen. Elec.	MT-536	900
20	Al. Chal.	ARY	1200
20	Westg.	CI	1200
20	Gen. Elec.	MT-322	1200
20	Gen. Elec.	MT-322	900
20	Al. Chal.		900
20	Gen. Elec.	IM	600
15	Al. Chal.	ARY	1800
15	L. Allis	OH-326	1800
15	Westg.	CW	1200
15	Al. Chal.	ARY	900
15	Gen. Elec.	ITC	720
10	Gen. Elec.	MT-182	1800
10	Wagner	BR	900
10	Westg.	CW	900

Hundreds of units below 10 H.P.

We have a complete stock of drum controllers, resistors and primary switches to provide constant or variable speed control for any of these motors.

CENTRIFUGAL PUMPS

GPM	Head	Make	Type
800	925	Worth.	6DSTUR
500	204	Worth.	468
500	250	Manis.	Turbo
300	800	Al. Chal.	MM-2
250	250	Worth.	Split
225	300	DeLaval	3P3
200	290	Worth.	2½R-2
66	325	Worth.	Triplex

All pumps can be furnished complete with motor, base & coupling. Specify phase and voltage.

RENT THE EQUIPMENT YOU NEED

(All rentals paid can be applied against eventual purchase)

OR BUY ON AN EXTENDED PAYMENT PLAN

WE'LL SELL, BUY OR TRADE
PHONE CANAL 6-2900

CHICAGO Electric Co.
1329 W. CERMAK ROAD
CHICAGO 8, ILL.

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36 IN. - 42 IN. - 60 IN. NEW BELT CONVEYOR EQUIPMENT IN STOCK

5000—CONVEYOR CO. BALL BEARING 6 in. and 5 in. dia. Idlers Troughing Type 60 in. $35.00 ea.; 42 in. $20.00 ea.; 36 in. $18.50 ea. Return Type 60 in. $15.00 ea.; 42 in. $11.50; 36 in. $11.00 ea. 4400 ft. 36 in. & 42 in. Belt.

35 COMPLETE NEW TERMINALS FOR ABOVE AT VERY LOW PRICES
DARIEN CORP. 60 E. 42nd St., New York 17, N. Y. MU 2-0042

FOR QUICK, DEPENDABLE COMPRESSOR SERVICE

AMERICAN AIR of JERSEY

GAS • DIESEL • STEAM • ELECTRIC

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A RENTAL COMPRESSOR FOR EVERY JOB

55 CFM Lindsay (GAS) Portable
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70 CFM Smith (GAS) Portable
89 CFM 6 x 7 Worthington HB, 15 HP Elec.
105 CFM Worth-IR-CPT Portable
107 CFM 7-7 x 7 Ingersoll FS-1 STEAM
129 CFM 7½ x 7 American AF-1, 20 HP
142 CFM Ingersoll Semi-Portable 25 HP
160 CFM IR-Worth Portable
165 CFM Smith 110SR Semi-Portable, 25 HP
195 CFM 8-9 x 9 Worthington HS STEAM
210 CFM Worthington (GAS or DIESEL) Port.
211 CFM 9 x 9 Worthington HB, 40 HP Elec.
279 CFM 11-10 x 11 Worthington HS STEAM
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This is important because the Dempster-Diggster has the digging height capacity to handle jobs oftentimes expected only of power shovels. The dumping height is 9'6" and the digging height is approximately 15 feet. This enables the Dempster-Diggster to work with high dump equipment.

✓ **TORQUE CONVERTER**
Excavating shovels and front end loaders have to take the abuse and punishment of intermittent jolts. The Dempster-Diggster is constructed and built, not only to accept this at its full value, but to smooth out the sudden jerking and jolting by means of a torque converter. The torque converter is a mechanical feature, but its effect on greater efficiency of the machine and lower operating costs is so great it is one of the important reasons why you want a Dempster-Diggster!

✓ **MINIMUM TURNING RADIUS**
The outside turning radius of the Dempster-Diggster is only 18'3".

✓ **ELECTRIC BUCKET TRIP**
You get a machine with an automatic electric bucket trip for dumping drop bottom digging bucket . . . giving you instant dumping and instant closing of bucket.

✓ **TRUCK-SPEED MOBILITY**
Dempster-Diggster moves from job to job without the use of hauling equipment or can be towed behind a dump truck with the use of a tow bar.

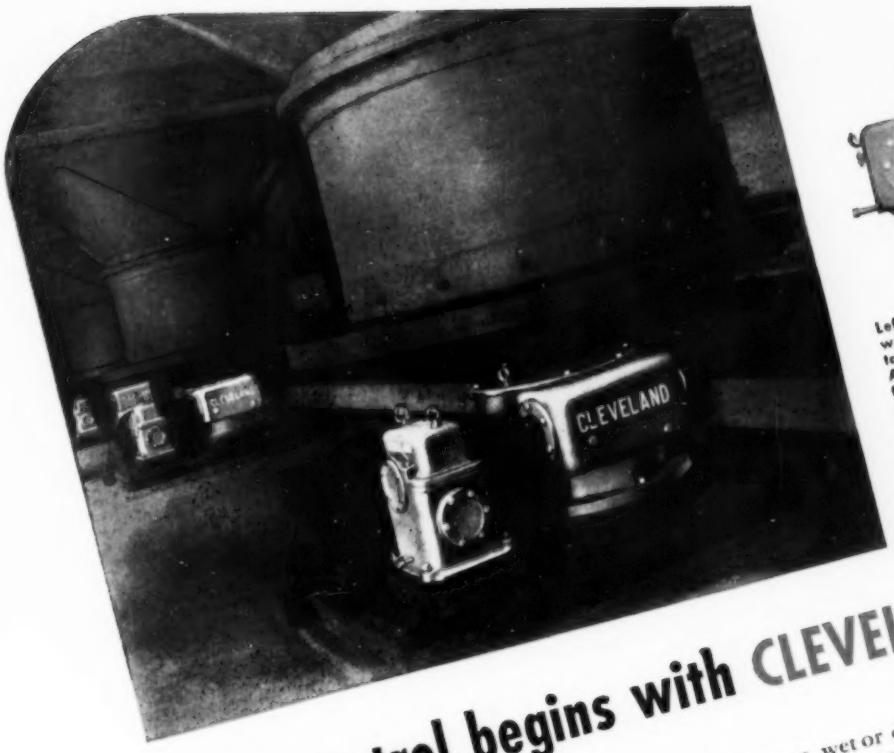
✓ **HYDRAULICALLY STEERED**
Your Dempster-Diggster has positive hydraulic steering booster which is operated by separate, individually driven pumps. Your operator stays fresh, will not tire with this finger-tip steering.

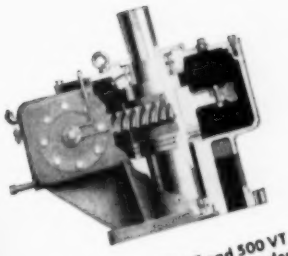
Here's a shovel that won't skim the bank or bottom—but gets a full bucket with every stroke. Here's a shovel that gives you the extra speed on the job and to and from jobs that means extra profits to you! Pound for pound, dollar for dollar, the Dempster-Diggster will out-dig and out-load any other available competing machine in tough going! Let us prove that statement! Write for complete information, including Folder No. 3116.

Photo above shows bucket against front of frame in the position which enables Dempster-Diggster to dig 15 inches below grade.

You get a truck payload with a Dempster-Diggster. Note truck is loaded to maximum heaped capacity, yet Dempster-Diggster has ample clearance.

DEMPSTER BROTHERS, 234 N. KNOX, KNOXVILLE 17, TENNESSEE





Left—Cleveland 100 AT and 300 VT worm gear reducers driving feeder tables in a large mid-western plant. Above—cutaway of an 800 VT feeder table unit shows one-piece gear shaft construction. Since 1912, Cleveland has concentrated its entire engineering and manufacturing effort on worm gearing—your assurance of correct design, precision workmanship and complete dependability.

Perfect feed control begins with CLEVELAND drives

NO MATTER what materials you process, wet or dry, fine or coarse, worm gear feeder table drives maintain steady feed rates at all times.

Cleveland has spent over a quarter century in the continuous development of feeder table drives. A rugged one-piece gear shaft construction carries thrust directly to the base of the unit. This design eliminates distortion and warping of housings under high thrust loads. Thus, wear-resistant case-hardened steel worm and nickel-bronze gear are always in perfect contact to transmit power smoothly and dependably.

You'll find hundreds of Clevelands at work in ore beneficiation and sintering operations, cement, stone-processing and coal preparation plants. Many outlast the machines they drive. *ALL* are run in at the factory before delivery!

Get more feeder table drive information by writing for free Bulletin 140. The Cleveland Worm and Gear Company, 3280 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

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in the manufacture of KRAFT-lok*
a new valve closure considered the
greatest contribution to the industry
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KRAFT-lok users report definite dollar savings
from production and packaging efficiency
that has amazed everybody in the business.

Other shipping sack manufacturers may soon
be offering bags with the KRAFT-lok principle...
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story from us—or ask us to give you a
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